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ORIGINAL LECTURES.

THE PLANS AND PURPOSES OF THE JOHNS HOPKINS HOSPITAL.

An Address delivered at the opening of the Hospital, May 7, 1889.

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SURGEON U. S. ARMY.

THE third paragraph of the letter of instructions communicated by Johns Hopkins to the Trustees whom he had chosen to carry out his plans for a hospital in the city of Baltimore, states that "it is my wish that the plan . . . shall provide for a hospital which shall, in structure and arrangement, compare favorably with any other institution of like character in this country or in Europe." What do you suppose the writer was thinking of when he penned that sentence? Had he in view any definite ideal, any mental picture of the institution which he proposed to establish, or was it merely an expression of a desire to give to his city the best thing that could be devised? I have read that letter many times, have heard much of the ideas, hopes, and wishes which were expressed in the numerous conversations which preceded its preparation, and it seems to me that the writer had an ideal, and not a mere vague desire—an ideal which was no doubt somewhat misty, but which did not correspond to any existing hospital, and one which he did not attempt to define except in a few prominent points to which I shall presently refer. In most respects Johns Hopkins took the same course with his hospital which he did with his University, and deliberately refused to trammel with specific directions those whom he had chosen to carry out his plans; but this letter of instructions indicates, nevertheless, a conception of much more definite character, and one which had been the subject of more discussion and reflection, than his scheme for an university. Whether this be so or not, I am at all events sure that his Trustees have endeavored to comply with this letter of instructions, and to do so in the broadest and best sense of the words.

The beginning of the results we have before us to-day; results which even now are not confined to these particular aggregations of bricks and mortar, as will be presently explained, and the end of which will be, as we hope and believe, to make life happier for millions now living and yet unborn. Only those who took part in the early deliberations of those charged with this trust can fully realize the anxieties, the doubts, the manifold perplexities which at first attended their decisions and movements. Only one or two of them had any knowledge of hospital matters; most of them were business men, bankers, lawyers, judges, railway managers, men who knew something of the management of men and money, but who were now brought face to face with a new problem, viz., how to build, organize, and manage

a hospital so that it should compare favorably with any other hospital in this country or in Europe.

To "compare favorably with," what does that mean? It is a peculiar phrase, which, coming from a shrewd business man and a member of the Society of Friends, signifies, I think, to excel, if possible; at all events that is the safest interpretation. And it was not this or that hospital which was to be surpassed or equalled, but all other hospitals in this country or in Europe; Africa, Asia and Australasia being put out of the question. It was a large contract.

The location was fixed—that had been done by Johns Hopkins, but they had to decide whether the structures to be erected should be temporary or permanent, of wood, brick or marble, in one large building or in many, and many other like points, before even the preparation of plans could be commenced. They followed the instructions of the donor and got advice; of which a great abundance was available. They visited the large hospitals of our eastern cities, employed five men, supposed to be skilled in hospitals, each to write an essay giving his plans and suggestions, published these essays in a book which had a wide circulation, and studied the criticisms and reviews to which this book gave rise.

Having duly considered the multifarious and widely divergent suggestions thus obtained, they finally selected one of the essay writers and asked him if he was satisfied with his own plans now that he had seen the others and the published criticisms upon them. He promptly said that he was not, whereupon they asked him to try again and do better. He set to work, aided by the architect of the Board, and the result was a set of sketch plans which he took abroad and obtained much counsel and criticism on, examining at the same time the model hospitals of Europe. He was much less satisfied with the sketch plans when he came back than he was when he started, and again the Building Committee, the architect, and himself reviewed the whole matter, and finally settled on the general arrangement which you will see to-day. Many details remained to be worked out; even the façades had not yet been designed; but the general scheme was settled, and the rest was comparatively easy for the time being.

Let us now for a few moments consider the broad general principles which governed the Trustees in the adoption of this plan. The first hospitals were established to give shelter and food to the sick poor, especially those who gathered in cities. Gradually physicians found that they could learn much in these aggregations of suffering and that they afforded the means of teaching others; but this last use of them is only about two hundred years old. Gradually, also, it came to be known that the knowledge thus obtained in the care of the sick poor was of use in treating the diseases of the well-to-do; and finally, within the last twenty-five years or so, people are beginning to find out that when they are afflicted with certain forms

of disease or injury they can be better treated in a properly appointed hospital than they can be in their own homes, no matter how costly or luxurious these may be. In the hospital they can have not only all the comforts of home, but more; not only skilled medical attendance and skilled nursing, but the use of many appliances and arrangements specially devised for the comfort and welfare of the sick which can hardly be found in any private house, and also freedom from noise and many petty annoyances, including in some cases too much sympathy and in others too little. This hospital, then, is to provide for the rich as well as for the poor; for those who can, and ought to, pay for the help given, as well as for those who cannot.

A second cardinal principle to be observed in such a hospital as this is, that it shall do as little harm as possible. A hospital may do harm by its foul air, by spreading contagious disease among its inmates, by neglect or carelessness of its nurses or attendants; and in years gone by hospitals have, no doubt, caused nearly as much sickness as they have relieved. This is now rarely the case, and in this hospital the arrangements for ventilation, isolation, and nursing are such as to do away entirely with this danger. There is another danger connected with free hospitals and dispensaries which is of quite a different kind and to which I can here only allude, namely, the danger of promoting negligence, shiftlessness, laziness, and vice by offering free relief from their consequences—the danger of pauperizing people. This is a danger connected with organization and management rather than with construction, and I can only say here that it has been foreseen and will be, as far as possible, guarded against.

The third principle to be kept in view in such a hospital as this is, that it should provide the means of giving medical instruction, for the sake of the sick in the institution as well as of those out of it. It is well known to those familiar with the subject that the sick in a hospital where medical instruction is given receive more constant, careful, and thoughtful attention than do those in a hospital where no such instruction is given. The clinical teacher must do his best; keen eyes will note every error in diagnosis, every failure in results of treatment. Moreover, the very act of teaching clarifies and crystallizes his own knowledge; in attempting to explain, the dark places become prominent and demand investigation, and hence it is that those cases which are lectured on receive the best treatment. I need say nothing here on the other side of the question, the value of properly trained physicians to the community and the necessity for hospital instruction in such training; Johns Hopkins understood all this and specially directed that "in all your arrangements in relation to this hospital you will bear constantly in mind that it is my wish and purpose that the institution shall ultimately form a part of the Medical School of the University."

Now there are medical schools and medical schools, and in obeying this direction of the donor the Trustees had to consider what sort of a medical school this school of the University was likely to be. As the majority of the Trustees were also Trustees of the University, they knew well the principles which underlie the organization of that institution and that the same principles would govern the organization of the medical department when that came to be taken in hand. One of these principles

is the thorough teaching of that which is known, another is to increase that which is known, and to furnish the men and means for doing this. So also the hospital should not only teach the best methods of caring for the sick now known, but aim to increase knowledge and thus benefit the whole world by its diffusion. Another point which had to be kept in view was the direction of Mr. Hopkins that there should be established, "in connection with the hospital, a training school for female nurses, not only to care for the sick in the hospital but to benefit the whole community by supplying it with a class of trained and experienced nurses."

It is also highly desirable that a hospital of this kind should have connected with it a well-appointed dispensary for the treatment of those who need medical aid but not a bed in the hospital. Through such a dispensary much good can be done at small cost, the selection of proper patients for the hospital is facilitated, the means of medical investigation and teaching are greatly extended and the scope of the nursing system can be made to reach the poor and ignorant in their own homes.

The last point to which I shall refer, which was kept in view by the Trustees in deciding upon the plans, was the general appearance of the buildings and grounds.

Mr. Hopkins gave no specific directions as to the buildings, but he directed that the grounds should be properly enclosed by iron railings, and so laid out and planted as to be a solace to the sick and an ornament to the city, and it was evident that the buildings should be of the same character so far as their purpose would admit. It was therefore decided that, while no utility should be sacrificed for the sake of architectural ornament, and the main purpose which I have referred to should be fully worked out in the plans before any attention was paid to external appearance, it was fit and proper that the buildings should form an ornament to the city, and a suitable monument to the memory of the donor.

Bearing in mind, then, these main principles, to provide for the proper care of the sick, both rich and poor, to provide for the highest class of medical education, to increase and diffuse knowledge, to provide trained nurses for both hospital and city, to provide a dispensary, and to make the buildings and grounds ornamental and attractive, let us see how the problem has been thus far worked out.

I will begin with the arrangements for securing that article of prime necessity in a hospital, viz., pure air. Air supply and ventilation in this climate are inseparably connected with heating for a considerable portion of the year, for comfortable warmth must be secured, and on the means of doing this must largely depend the methods of ventilation and their success. The temperature of Baltimore may vary from 103° in the shade to 17° below zero F., hence its perfect hospital must be one which would answer for the tropics or for Northern Russia. To secure this, double walls, with air spaces, were given to the buildings, and a system of heating by the circulation of hot water was adopted for the wards. This system consists of central boilers, from which flow and return pipes extending beneath every building, connected with heating coils, of which there is one for every two beds in the ward above. The temperature in these coils can be exactly regulated to any temperature between 150° F. and the temperature of the external air by simply regulating the velocity of the flow of water by the valves at-

tached to each coil, and thus it is quite possible to give one pair of beds a temperature of 70° and another pair in the same room, at a little distance, a temperature of 60° F., to suit the needs of different cases. The 80,000 gallons of water contained in this heating apparatus go round and round, carrying heat from the furnaces to the wards, but every building has its own independent means of ventilation, and it is not possible to go from one ward into another without going into the open air on the way, so that foul air, if any forms, cannot spread from one building to another. Nevertheless, the buildings are so connected by corridors and underground tunnels that in passing from one to another there is no exposure to rain or snow, and the least possible to cold air, while the food is not exposed at all. This is not the place to describe the ventilation. I will only call your attention to the fact that the temperature of the incoming air by any bed is easily changed by turning a valve, while the quantity of air is not changed; to the arrangement for taking foul air from either the bottom or top of the ward, or from both, and to the fact that all this has been thoroughly tested during two winters and found to give the results hoped for.

One of the peculiarities of the wards is that all the service rooms are collected at the north end, leaving the south end free from obstruction and fully exposed to the sun, the end of the ward being a large bay window looking out on the central garden, and with a floor which can be warmed so that the patients, able to sit there, can be thoroughly comfortable. Another peculiarity of the sick wards is the arrangements for easy cleansing, and to prevent possible accumulations of dust in corners and crevices. Corners are to a great extent done away with, and easy curves given in their place, even at the junction of the floor and walls there is a curve instead of the usual right angle, and I advise you to look at it and see how it has been produced, for it ought to become fashionable, and take the place of the old mop-board in all well-constructed houses. So, also, the doors have not the usual moulding about the panels, giving recesses which is almost impossible to clean.

One of the wards is especially arranged for cases which may be either contagious or offensive. In this building each patient is in a room by himself, and all these rooms open into a corridor through which the wind is always blowing. There are many details about this isolating ward which are worth looking at, but which I have not time now to refer to, and I must omit details about the pay ward, the octagon ward, and the peculiar fittings and conveniences of the kitchen, laundry, apothecaries' building, etc., for the same reason.

Let us pass now to the second object of the hospital, the giving means for higher medical education, and see what has been done for that. In the first place, there is a large amphitheatre with appended rooms for the reception of accidents and emergencies of all kinds. In the second place, provision is made for at least thirty students to reside constantly in the hospital and devote themselves under proper guidance to the study of disease and the practical care of the sick. It is intended that these places shall be open only to those who have had a thorough previous training, and who have shown themselves to be fitted to undertake this important part of their studies. As a rule, not more than five per cent. of medical graduates have had any opportunities worth

speaking of to study and treat diseases in the living man when they receive their diplomas. They have to get this experience on their first patients, and sometimes the experience is rather hard—for both doctor and patient. This hospital has provided for the class of the medical school in the last year of their studies good rooms with bath-rooms, a dining-room, and other conveniences, and here they can be taught the actual daily work of a physician, for which all their previous studies are only preparatory. Many of the arrangements of the hospital have been constructed with reference to this instruction; it is a great laboratory for teaching the practical applications of the laws of hygiene to heating, ventilation, house drainage, and other sanitary matters. All pipes and traps are either exposed to view or can be seen by merely opening a door, and in the tunnel beneath the corridor you can study at your leisure the complicated and yet simple arrangement of pipes for gas, steam, water, sewage, etc., which are usually buried and remain a profound mystery to every one except the plumber, and often puzzle even him.

Closely connected with this subject of teaching is that of increasing our knowledge of the causes, symptoms, results, and treatment of disease; in fact, one cannot be thoroughly and well done without the other, and hence many of the provisions for the one are also useful for the other. For example, to go back to our system of heating and ventilation, there are many points connected with it which are destined for experimental work, to compare steam with hot-water heating, to determine the velocity of water at different temperatures, to compare ventilation by aspiration with that by propulsion, or by upward currents with those drawn downward.

One structure is very largely devoted to and fitted for experimental research, and that is the pathological laboratory, where the causes, processes, and results of disease are to be studied. Upon the results obtained in that laboratory may yet depend the saving of many lives, the relief of unspeakable agony, the warding off of pestilence from the city, and, to put it in a strictly business light, the value of real estate and the rate of taxation of this community. We are on the verge of great advances in our knowledge of the causes and methods of disease, and I feel sure that these will be only preliminary steps to far greater and better knowledge of how to prevent or to treat them than we now have. The probable length of life of the newborn infant to-day is not much more than half what it ought to be; the practical productive period of the life of our men and women is shortened and interrupted by unnecessary disease and suffering; but remember, if these things are to be amended, it is not merely by teaching old doctrines; we must open fresh windows and let in more light, so that we can see what these obstacles really are. It is in this work of discovery that it is hoped that this hospital will join hands with the University, and it is in this hope that some of the structures around you have been planned and provided.

A word now on the fourth object kept in view in this hospital, viz., the Training School for Nurses.

Some of you probably have had some personal experience of the difference between an educated, properly trained female nurse, and one of the old-fashioned sort, but if you have not, it would take much more time than I now have to describe it. I can only say, that in many

cases a competent trained nurse is as important to the success of treatment as a competent doctor, and that one of the greatest difficulties in treating well-to-do patients in their own homes in this city is the want of proper nurses. Affection and zeal may do much, but they cannot take the place of knowledge, and this kind of knowledge is not to be acquired in a day or in a month. It is a work best carried out by women, though not one woman in ten is fit for it, or should undertake it. But the woman who is fit for it, who has physical health and strength, sound sense, loving kindness, patience and tact, and who has been thoroughly taught the art of nursing the sick, with all its thousand details, has the power of doing good and increasing happiness to a degree which few others possess. In a properly conducted hospital ward she is a necessity, but her field of usefulness and helpfulness is by no means limited to that. She is needed outside the hospital, in the home of the rich to nurse and care for the sick; in the home of the poor, to teach prevention as well as nursing. To gather here such women, to have them thoroughly instructed, to furnish them with the attractive and comfortable home which they deserve, and to send them where they are most needed, with provision for their return when the work is done, is the object of the training school of this hospital.

For this purpose the Trustees have provided a large and handsome building, separated from the others, and exclusively appropriated to the female nurses, where each can have her own comfortable room, and where a common parlor, library, dining-room, bath-rooms, and, in short, the arrangements of a first-class hotel are provided for their use. Here also is a training-kitchen and a lecture-room to aid in the work of instruction. The intention is that when the nurse has finished her six or eight hours' tour of duty with the sick, she shall come quite away from the ward and all that pertains to it, and take her rest and recreation in a totally different atmosphere, and special effort has been made to have this home attractive and pleasant.

The fifth object which I mentioned as having been kept in view in the plan and construction of these buildings is the Dispensary. This is a large building on the north front, consisting of a large central waiting-room, surrounded by a number of smaller rooms for the use of the physicians and surgeons who are to examine and prescribe for the patients, and having bath-rooms, and a small apothecaries' establishment for the issue of the medicines ordered. This building is connected with the amphitheatre by a short covered corridor, and is specially arranged with reference to teaching. It, as well as the amphitheatre, is heated by steam instead of hot water, partly because they are not in constant use, and a rapid means of warming is desired, partly for the purpose already referred to of giving the means of experimental comparison of the two systems. The means of supply of fresh warm air in these two buildings, and of removing the air made impure by exhalations are somewhat peculiar, and merit examination.

With regard to the architectural design and external appearance of the buildings, and the laying out and ornamentation of the grounds, I can only say that you must see and judge for yourselves whether Mr. Hopkins' wish that they should be an ornament to the city has been successfully complied with. So far as external ornamentation is concerned, it is confined almost entirely

to the large buildings on the west, or Broadway, front, which it was felt should harmonize in style of decoration. These central buildings, consisting of the administration, with the one pay ward on either side, are constructed of pressed brick with ornamentation of a dark blue, fine-grained, hard, and durable stone, known as Cheat River stone, and of moulded terra-cotta of the color of the brick. The external designs for these, as for all the other buildings, were furnished by Messrs. Cabot & Chandler, of Boston, and I think we have good reason to be well satisfied with the results they have produced. The grounds are laid out and planted in accordance with designs furnished by Mr. E. W. Bowditch, of Boston.

As regards construction, I do not hesitate to affirm that these are the best built buildings of their kind in the world. The material is the best, the most skilled and careful workmen were employed, and, above all, the work received the most careful, conscientious, and intelligent supervision as it progressed. For this supervision we are indebted to Mr. John Marshall in the beginning and to Mr. William H. Leeke for the remainder and conclusion of the work; and we are also indebted to the latter for many valuable suggestions as to modes and details of finish which are so important in hospital. The details of the complicated and extended system of heating, ventilation, and plumbing were designed and the work executed by Messrs. Bartlett, Hayward & Co., of this city. I should like to go on and mention a number of other names of persons who have done good work here, but want of time forbids. I will only say that these buildings embody the counsels and suggestions of many men and women in this country and abroad, but among them all there is no one who from the very beginning of the conception of the idea of this magnificent gift in the mind of Johns Hopkins down to this present moment who has had more to do with shaping the results, who has furnished more valuable suggestions, who is more thoroughly acquainted with all that has been done, and why it has been done, who has worked so unselfishly, and who more deserves honor in this connection than the President of the Board and Chairman of the Building Committee through the whole progress of the work, Mr. Francis T. King.

Briefly and incompletely as I have sketched these salient points of the plans and purposes of this hospital, I hope I have, nevertheless, shown you that it is intended for other purposes besides providing shelter, food, and drugs for the sick. In saying this I have not the least wish to undervalue or disparage those institutions which do make this their main or only object. There is abundant need of their existence and work also; but this institution should not be judged by the rules which apply to them; it cannot be managed after their fashion: if it does not produce results different from theirs it is a failure and the expenditure upon it a mistake.

Thus far I have been speaking of the buildings only, and trying to give you some idea of the motives which led to their being as they are, and what they are, and not otherwise. From the beginning, however, it has been recognized that the buildings and machinery are only means to an ends, tools which must be handled by skilled workmen to produce the desired result; and throughout all these years of planning and building, the question of organization and of the sort of men and women who were to use and work with these things has

not been lost sight of. It is true that no attempts were made to select and engage individual members of the hospital staff until quite recently; but there was, nevertheless, a tolerably definite conception as to the ideas, mode of work, character, and wants of those who are to constitute this staff, and when the time came for selecting, it was made by this standard.

On the philanthropic, social, and religious aspects of this great trust I do not propose to touch, but I wish to say a very few words of the hopes and wishes of scientific men and physicians with regard to it. From the time of the first announcement of the Hopkins bequests to the present, these men, all over the world, have been keenly interested in the plans and methods adopted in carrying them out. Whenever and wherever the problems of higher medical education have been discussed within the last ten years, there has been speculation as to the probable course of the Johns Hopkins medical department, and the influence it would have upon the standard. I may even say that some of this influence has been exerted in advance, has been discounted, as it were, for the plans of this hospital have stimulated changes in some of our best medical schools, and have been copied with more or less modification in some of our latest hospitals.

What is it, then, that the physicians want? Is it more physicians, more family practitioners, more surgeons, more specialists? Not at all. They know very well that there is no danger that the supply will not be equal to the demand; when they become overburdened with practice they do not at present find it difficult to obtain assistants; they have no fear lest the seventy or eighty medical schools of this country should fail to produce a sufficient number of medical practitioners to meet the wants of our increasing population; and they know also that the medical schools of Great Britain and Germany are sending to us quite as much of their product as we can conveniently dispose of. They hope that the Hopkins medical school and hospital will do two things. The first is, that it will demand of those who propose to become its students evidence that they have a sound basis of preliminary education before they commence, and that its standard in this respect shall be little below that of the requirements for granting the degree of bachelor of arts in the University. It is hoped that the men thus selected will go through a carefully graded course of study, including actual work in properly fitted laboratories, and that after this they will be brought into contact with the sick, and thus obtain practical experience of the duties and responsibilities of the practitioner of medicine before they offer their services as such to the public.

So much our physicians desire of every medical school, for the sake of the honor and dignity of the profession, and for the good of the public, and they desire especially that this school shall form an example to which they can point as showing how medical education should be conducted, and what should be required of the candidate for the degree of doctor of medicine.

The very general interest in the combined Hopkins trusts felt by physicians and scientific men not only of this country but of the whole civilized world, is largely due to the belief that the relations which will here exist and be maintained between the University as a whole and its medical department, of which this hospital is to

be an important part, will be close and intimate, so that the true University spirit will pervade, stimulate, and encourage the hospital work. In this country medical schools have either had no connection with Universities properly so called, or the connection has been slight and nominal, such as depends upon the formal conferring of medical degrees by the University. Here, however, through the influence of the biological department, there are secured common interests and mutual influence, and it is hoped therefore, that the necessary details of technological instruction will be arranged in accordance with and subordinate to the broad principles of scientific culture upon which this University is organized.

It is because it is believed that this will be the case that there is a widespread hope and expectation that these combined institutions will endeavor to produce investigators as well as practitioners, to give to the world men who can not only sail by the old charts, but who can make new and better ones for the use of others. This can only be done where the professors and teachers are themselves seeking to increase knowledge, and doing this for the sake of the knowledge itself;—and hence it is supposed that from this hospital will issue papers and reports giving accounts of advances in, and of new methods of acquiring knowledge, obtained in its wards and laboratories, and that thus all scientific men and all physicians shall share in the benefits of the work actually done within these walls. But, however interesting and valuable this work may be in itself, it is of secondary importance to the future of science and medicine, and to the world at large, in comparison with the production of trained investigators, full of enthusiasm, and imbued with the spirit of scientific research, who will spread the influence of such training far and wide. It is to young men thus fitted for the work that we look for the solution of some of the myriad problems which now confront the biologist and the physician.

Do I seem to ask too much? to be too sanguine as to what human thought, and study, and skill may accomplish? to forget that there is one event unto all; that the shadow of pain and death comes on the wise man as on the fool? I have two answers. As surely as our improved methods of prevention and treatment, based on the advances in knowledge of the last fifty years, have already extended the average duration of life in civilized countries nearly five years, have prolonged thousands of useful and productive lives, and have done away with the indescribable agonies of the pre-anesthetic period, so surely we are on the verge of still greater advances, especially in the prevention of infectious and contagious disease, in the resources of surgery against deformities and morbid growths, and in the mitigation of suffering due to causes which cannot be wholly removed. But the second answer is more important, and it is this: It is our duty to try to increase and diffuse knowledge according to the means and opportunities which we have, and not to rest idle because we cannot certainly foresee that we shall reap where we have sown. "It is not incumbent on thee to finish the work, but thou must not therefore depart from it," says the Talmud, and "Of him to whom much is given much shall be required," says the Scripture.

To you, the officers of this institution, and to you, men and women of Baltimore, there is now given the opportunity of giving powerful aid in this increase and diffu-

sion of knowledge of the laws of human life, disease, and death. Surely, those who are working in the wards and laboratories of the hospital and University will do their best; surely, also, the citizens of this great city of a great nation, which at no distant day will take the lead in scientific work, will encourage, sustain, and sympathize with these workers. I would have this hospital become famous, not for fame's sake, but because this will be evidence of the good work which has been done in it; but we must not be impatient. There are difficulties to be overcome, delays which must be submitted to. We cannot at once have the medical school which is essential to the plan which I have sketched; but there is plenty to do for the present, and I am certain that in time all these present obstacles to full development will be happily overcome.

Success in this, as in all other enterprises in this world, is to be obtained by unselfish work for the good of others, by wise counsel, by coöperation, and by persistent effort.

A hospital is a living organism, made up of many different parts, having different functions, but all these must be in due proportion and relation to each other, and to the environment, to produce the desired general results. The stream of life which runs through it is incessantly changing; patients and nurses and doctors come and go; to-day it has to deal with the results of an epidemic, tomorrow with those of an explosion or a fire; the reputation of its physicians or surgeons attracts those suffering from a particular form of disease, and as the one changes so do the others. Its work is never done; its equipment is never complete; it is always in need of new means of diagnosis, of new instruments and medicines; it is to try all things and hold fast to that which is good.

"Et quoniam variant morbi, variabimus artes."

It has been said that "hospitals are in some sort the measure of the civilization of a people, but a hospital of this kind should be more than an index. It should be an active force in the community in which it is placed. When the mediæval priest established in each great city in France a Hôtel Dieu, a place for God's hospitality, it was in the interests of charity as he understood it, including both the helping of the sick poor and the affording to those who were neither sick nor poor an opportunity and a stimulus to help their fellow-men; and doubtless the cause of humanity and religion was advanced more by the effect on the givers than on the receivers. It is the old lesson so often expounded, apparently so simple and yet so hard to learn, that true happiness lies in helping others; that it is more blessed to give than to receive.

In some respects we to-day have a much wider outlook than the men of a thousand years ago. This hospital is designed, as I have told you, to advance medical science as well as to give relief to the sick poor, but the fundamental motive is the same—to help others.

We have here the beginning of an institution which shall endure long after the speakers and the audience of to-day shall have finished their life-work and have passed away. Founded in the interests of suffering humanity, intimately connected with a great university, amply provided with what is at present known to be essential to its work, we have every reason to predict for it a long and prosperous career, with steadily progressing improve-

ment in its organization and methods, and enlargement of its activity and influence.

Let us hope that before the last sands have run out from beneath the feet of the years of the nineteenth century it will have become a model of its kind, and that upon the centennial of its anniversary it will be a hospital which shall still compare favorably, not only in structure and arrangement, but also in results achieved, with any other institution of like character in existence.

ORIGINAL ARTICLES.

THE RELATIONS OF THE TUBERCLE BACILLUS TO THE EARLY DIAGNOSIS AND TO THE PROGNOSIS OF PHthisis.¹

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THE subject assigned to me to-night is one regarding which but little need be said. As I understand the purpose of this meeting, it is more to direct and call forth discussion upon the whole subject of phthisis, than to attempt to lay before you any new views, that the papers are read. For this end I shall take a pretty positive stand in my short paper, hoping that those who discuss it will thus be induced more fully to express their approval or dissent.

The first division of my subject is the value of the discovery of the bacillus tuberculosis in the sputum of patients in the early diagnosis of phthisis. So often we have presented a problem like the following. A young man is engaged in a business of such a nature that his presence is absolutely necessary in order successfully to advance it. He works hard; after a while he begins to lose flesh a little and has a cough, with perhaps slight expectoration. He consults us, and asks whether or not he has phthisis. Perhaps some of his relations may have had it. Now, should we answer yes, and recommend a change of residence, it means that his business prospects are ruined. He may have to commence life again. If we are right, all is well; but, if wrong, we have done a grave injury. On the other hand, if we say he has no phthisis, and are wrong, his life may be the price of our blunder.

How should we go to work in order to answer the question? We carefully ask about the history; we examine the chest; we examine the sputum, perhaps a number of times; we may find the bacillus in the sputum, and then all doubt is removed. But, suppose we do not; what then? Can we say that phthisis does not exist? Decidedly, no. It must be remembered that in phthisis we often have no tubercle which is situated so as to be connected with the air-passages. It is, indeed, possible for an extensive tubercular deposit to occur, and yet no

¹ Read before the New York Academy of Medicine, May 2, 1889.

bacilli be discharged. It is also possible for so much bronchial discharge to exist that the bacillus may be overlooked in the large quantity of expectoration. The search for a needle in a haystack is usually thought unprofitable, and it is not unlike the search for a few bacilli in a number of ounces of expectoration. Surely none would deny, in a given case, the existence of phthisis because the bacillus could not be found. Even though very many careful examinations be made and no bacilli be discovered, yet this evidence against the diagnosis of phthisis is but slight. Of course, the bacillus as positive evidence is invaluable. We must not allow too much time to go by while waiting to find the microbe, or the patient may lose his life before we make up our minds.

Before going further I wish to remind you of some points regarding the anatomy of the lesions of phthisis, and the manner in which the bacilli are distributed in the lung tissue. Phthisis I define as a more or less complex disease, depending upon the growth of the bacillus and consequent tubercle formation. As seen in New York, there are a number of cases in which the lesion, until near the end, seems to consist of the deposit of tubercles, beginning in the upper lobes and gradually spreading and involving the lower. There is also some pleurisy and some bronchitis. Now in these cases there is not much tendency for the tubercles to break down early in the disease. There being practically no pulmonary consolidation in these cases, nothing at first but a few scattered tubercular nodules, the physical signs are of little value. It is possible for this form of phthisis to progress very far, yet give no distinctive signs. Unfortunately, for the reason that scattered tubercles constitute the lesion, and that these do not early break down and empty their bacilli into the bronchial secretion, the detection of the latter is frequently impossible at the very time they would be of the most value.

In another form of phthisis we have with the tubercle deposit pneumonia, coagulation-necrosis, marked bronchitis, etc. Practically, this form gives signs, owing to the consolidation, earlier than the other. It also breaks down over a greater extent of the lungs. The bacilli are frequently and abundantly discharged.

It may be said that those cases presenting the greatest difficulties for diagnosis, disregarding the bacillus, present also the greatest difficulties in finding the bacillus. In many of them it is not to be found, and we must make the diagnosis mainly from the history, and to a lesser degree from the physical signs.

As to the prognostic value of the bacillus it can hardly be said to have any. Patients going rapidly down hill will be found whose expectoration contains but few bacilli, and on the other hand large

numbers may be found in the sputa of those whose disease is advancing slowly, if at all. It is only a question of the freedom with which cheesy matter is emptied into the bronchi. Strangely enough, there is a decided tendency for many to regard the bacilli which are discharged as a measure of the disease, as if they and not the ones growing in the patient did the harm. Hence, we read of "diminution in the number of the bacilli" under varied treatments as a symptom of improvement. It may or may not be such a symptom; at best it is a most delusive one. Watching for it and laying stress on it has done one great harm: it has given a longer life to the various so-called "antiseptic methods" of treatment. Of course, the word "antiseptic" is here used as meaning destructive to bacillary life.

"A strong solution of, e.g., carbolic acid kills bacilli after some hours; therefore, give very small doses of that agent (doses so small as to be when diluted with a bulk of fluid equal to that of the blood entirely harmless to the microbes) and thus cure the phthisis." This is the real basis of reasoning for all such treatment, and how often have we heard in regard to each of the new antiseptic methods that "the cough and expectoration and night-sweats improved; the bacilli were reduced in numbers," and to this should usually be added, the patients died!

Now the fact that bacilli vary greatly in numbers from time to time has added somewhat to the apparent value of the many different kinds of treatment. I am aware of the fact that I am somewhat exceeding the bounds of my subject, but the time has come for a protest to be made against the administration of poisons to unfortunate people in the so-called "antiseptic treatment" of phthisis. To do this and to call the methods by which the particular poisons have so far been chosen "scientific," is possibly to injure the patient, but certainly to exhibit a peculiar idea of what constitutes science.

I would not for a moment be understood as objecting to the trial of any non-injurious treatment for phthisis. It would be reasonable to try an infusion of cobwebs, such as was of old used in malaria. I protest, however, against the giving of any antiseptics tested as now and calling it rational. While the complex body cells are easier to kill than the more simply constructed bacilli, it does not seem very encouraging to try to kill the latter while leaving the former untouched. It is probable that nourishing the phagocytes is better than trying to kill the bacilli. It is possible that empirically something may be found capable of acting as a specific bacillary poison, but no evidence has yet been obtained that such a substance exists, nor is it likely to be obtained by the present crude methods.

The propositions set forth in this paper are these:

1. The bacillus tuberculosis is of great positive but no negative value in diagnosis.

2. In prognosis the bacillus is of but little value.

3. In both diagnosis and prognosis quite as much depends upon the careful study of the case, as a whole, as if there were no bacilli concerned in producing the disease; except that a diagnosis is sometimes rendered positive, which would otherwise be doubtful, by finding the microbe.

In concluding the paper, I can only say that it seems a pity to have taken up your time to make such absolutely trite remarks.

Before any discussion takes place I wish it understood that I say nothing about any phthisis not of bacillary origin. We see such cases very rarely in New York. What I refer to is the so-called "catarrhal phthisis" and "tubercular phthisis," both diseases caused by the bacillus of Koch.

THE USE OF BORAX IN THE TREATMENT OF EPILEPSY.

BY HORACE G. HILL, M.D.,
OF PHILADELPHIA.

IN November, 1884, Mary —, aged sixteen, was brought to me, with the following history: Her father had always been considered a delicate man, and died when about thirty-two years of age, from some form of spinal disease. Her mother is still living, and, with the exception of attacks of hepatic colic, has been in fairly good health. She is, however, of decidedly neurotic temperament, and subject to severe headaches from slight causes. One uncle, on the mother's side, was an epileptic from early childhood, and died at sixteen years of age, from burns received by falling into a fire during a convulsion. Another uncle on the same side is living, but has for many years been a confirmed epileptic. Up to the age of seven years the patient appeared to be a healthy child; but at that time attacks of *petit mal* first showed themselves, recurring at progressively shorter intervals. One year later the attacks of *grand mal* were developed. Menstruation was established at fourteen, but was irregular in interval and amount, and the recurrence of the period was always attended by increased frequency and severity of the epileptic seizures. Few days passed without one or more convulsions, and frequently four or five of the major attacks and numerous minor attacks would occur within twenty-four hours. In addition to the treatment of her family physician, she had consulted three specialists in Philadelphia and New York. The one placed her upon a combination of the three bromides; the second upon nitroglycerine; and the third upon hydrobromic acid. In each instance the use of the remedy was followed by some temporary improvement, in that the number of seizures was lessened, but in each instance, notwithstanding the utmost care in following the line of treatment marked out, she relapsed after a few months.

She was, when I first saw her, of large frame, and with a fair amount of fat. The flesh was flabby, the complexion decidedly chlorotic, and the eyes lacked

expression. She was very reticent, without animation, afraid of company, and very distrustful of herself. Mental development was much retarded, it being impossible for her to fix her attention upon anything requiring concentration. She was easily fatigued by either mental or physical exertion. The appetite was capricious, and the bowels constipated. She suffered frequently from obstinate frontal headache, sometimes attended by nausea and vomiting. The circulation was sluggish, and cold feet a constant symptom. Urine analysis showed an excess of phosphates, but nothing else abnormal. Menstruation was irregular and scanty, sometimes recurring every two weeks. There was the usual bromide acne upon the face and chest. The epileptic attacks (the frequency of which has been before stated) were largely nocturnal, but there was no absolute rule in this respect.

Treatment.—In taking charge of the case, the great importance of proper food, sufficient time for meals, and thorough mastication, was impressed upon the mother, and the diet was regulated by a definite diet-list which excluded all rich and indigestible dishes, and limited the daily quantity of nitrogenous food. Directions were given regarding bathing, friction to the skin, and mental and physical exercise pushed to a point involving slight fatigue. The bowels were kept in normal condition by a suitable laxative. As the medicinal portion of her treatment, she was placed upon nickel bromide, a remedy which had been recently introduced, and which was highly recommended where the usual bromides failed. Fowler's solution in moderate doses was conjoined.

This treatment was continued one year, during which time the attacks ranged from two to nine per month. At the end of that time the stomach became intolerant, and the remedy had to be discontinued. Well-marked and undoubted improvement had occurred, but the nickel bromide acted as a depressant, and when it was dropped it became necessary to substitute active tonic measures. Under tonic treatment, but with no change in diet or hygienic surroundings, the number of attacks was increased to thirteen per month.

It was at this time, April, 1886, that I chanced to find in the *Boston Medical and Surgical Journal* an article written by Dr. Charles F. Folsom, in which he claimed that borax is of great value in some cases where the bromides fail. The usual remedies for epilepsy had been tried in this case, and had not succeeded to anything like the desired degree. As it was impossible to leave the patient in the condition in which she was at that time, I adopted the suggestion, and resolved to give so simple a remedy a fair trial. I must confess that I had little hope of good results. Other rules remained as before; but instead of the nickel bromide I substituted borax gr. x, with tr. cardamom. comp. 3j, in water, one and a half hours after meals.

Improvement was immediate and marked. Four attacks occurred within the first ten days, and before she was well under the influence of the drug. Then followed a period of three months with no seizures at all.

This borax treatment has now been continued for three full years, and the results are as follows: The attacks have greatly diminished, both in number and severity. There have been periods of complete immunity, extending over several months at a time, a thing before unknown and unlooked for. When attacks did occur there were but one or two during the month, usually to be traced to some slight error in the diet, or to hastily eaten meals. The greatest number of attacks in any one month has been four. There has been uninterrupted physical and mental development, and instead of the flabby, chlorotic, stupid girl, she has become a robust and vigorous woman. Menstruation is regular in interval and amount, and unattended by neurotic disturbances. Headache has almost entirely disappeared. She no longer shuns society, but mingles with others freely and without distrust of herself. Her judgment can be relied on. Under the instruction of a private tutor she is rapidly making up for lost time. It is now six months since the last attack, and her mother considers her, to all intents and purposes, well.

In narrating the history of this case, it is not the purpose of the writer to claim any brilliant results. It will be conceded that the family history, the mode of development of the disease, the time of life at which it developed, and the failure of the most approved methods of treatment to make any marked impression upon the case, all combined to render the prognosis unfavorable in the extreme. And with this poor outlook it is enough to claim that the disease, which had formerly controlled the physical, moral, and mental life, has been thoroughly subordinated and the opportunity offered for normal growth in all directions. This has undoubtedly been achieved.

The remedy is but little known, and rarely used in the treatment of epilepsy. In standard works bearing upon the subject allusion is made to it in scanty terms, or, as is far more frequently the case, it is not named at all. It is not probable that it will ever be used where the bromides are effective, as they undoubtedly are in the majority of cases, but it seems to be of special utility where the bromides prove useless and the patient is in danger of being left, comparatively without help, to the deleterious influence of the disease.

This remedy possesses advantages in that it does not act a depressant, and, when given in the manner indicated, does not cause gastric disturbance. Occasionally a slight, scaly eruption is noticed, which can be readily controlled by small doses of Fowler's solution. The dose may be increased to gr. xx, though in the case reported it has never been necessary to exceed the half of this quantity.

I have had under observation for the past four months another patient with whom also the bromides disagree. Under similar treatment there has already

been great improvement, but it is, of course, too soon to report anything of definite value.

3416 BARING STREET.

ASTHMA DUE TO FUNCTIONAL DERANGEMENT OF THE STOMACH;

With Remarks upon Treatment.

By W. W. VAN VALZAH, M.D.,

AND

CHARLES R. CRANDALL, M.D.,

OF NEW YORK

THE following case of bronchial asthma is one of more than usual interest, owing to its causation, severity, and duration. It illustrates, in the most marked degree, to what extent indigestible foods, acidity and fermentation, distention of the stomach and bowels with gases, and the absorption of morbid material into the blood, may cause prolonged and terrible asthma in one predisposed thereto.

This form of causation is far more common than is generally believed, and has not received the attention it deserves. While nearly all authorities admit that paroxysms of asthma are due to some reflex irritation, at the same time but little stress has yet been laid by any of them upon the fact that the seat of trouble is most commonly located in the stomach, or in the bowels, or in both. One distinguished author of an elaborate work on *The Practice of Medicine*, simply mentions, in a chapter eleven pages long, on asthma, that "indigestion, in some cases, proves an exciting cause oftener than anything else." Whereas, it would have been more nearly correct to say that improper food and functional or catarrhal disease of the stomach and bowels are more often the cause of paroxysms of asthma than *all* things else. With a view to the need of impressing this important truth, it is believed that there is no necessity of apologizing for presenting an illustrative case, and a few practical details of successful treatment that have now been applied to many cases.

CASE.—Mr. L., aged forty-eight years; manufacturer and merchant. In early life he was considered frail and not well constituted. In boyhood he lived on a farm but was not well; suffered more or less from fever and ague. At the age of nineteen he went into the army, but was soon taken sick; army food seriously affected his stomach and bowels, and later he had typhoid fever. He was subsequently wounded in a battle and was sent North for treatment; here he was stationed at David's Island, where a good climate, plenty of exercise, and a meat diet restored his health, and he increased in weight to 180 pounds. After serving four years in the army he went to Westfield, Mass., and engaged in manufacturing. His health remained fairly good for three years, at the end of which time bronchitis developed and was accompanied by more or less asthma. At the same time he began to suffer from

indigestion, flatulence, and pain in his bowels, all of which obliged him to live on a light, restricted diet. The asthmatic attacks gradually increased from an occasional slight attack quickly relieved, to those lasting six weeks at a time, which nothing would relieve. During these long periods he was obliged to sit up all night, using every available remedy and receiving the best treatment then known. Under such suffering his general health declined, and his weight was reduced to 140 pounds. Finally, he had an attack of pneumonia, which prostrated him still more. When sufficiently recovered he took a trip to Florida and was gone four months, but was not benefited. Then he gave up business and went to New York for treatment at the hands of the most renowned men in the profession.

Despite the best treatment to be had, asthma prevailed in its worst form, and his sufferings became so severe that it was thought he would die. In this condition he was taken to Montclair, N. J., where the climate agreed with him and improvement ensued. It is worthy of note that during all this time he had pain in his stomach and over the liver, and suffered from indigestion. These symptoms were, however, considered secondary instead of primary. After improvement took place he went home to Westfield, only to be stricken again with the severest asthmatic paroxysms. Later he started for Maryland, hoping to obtain relief, but grew rapidly worse, and returned to New Brunswick, N. J. Here he found comparative comfort and settled down for a year. Having, as he supposed, recovered as far as possible, he returned again to Westfield, but on the second day was stricken with even greater severity. For three days he coughed, raised, struggled, and gasped, until he almost died, and longed for death to relieve him. In this condition he was taken from home to New Brunswick, N. J., almost dying on the way, but was rewarded with gradual relief. These attacks were so severe that they resisted every known remedy and the best medical skill that could be obtained.

Finally, in the year 1874, he went to Denver, Colorado, to live, and at first was benefited by the change. After a time his chronic bronchitis seemed to grow worse, but the asthmatic paroxysms were less frequent, and at no time was he ever free from suffering. As a rule, he has had from three to ten paroxysms a day, and has been obliged to make daily use of pastiles and sedatives. As Denver became more densely settled, he felt the ill effects of the increased amount of dust and smoke, and was compelled to make frequent changes. Usually he spent the spring and fall at Manitou Springs and there found some relief, but never immunity. While at these springs he drank copious quantities of alkaline waters, the general effect of which was beneficial. It was his practice in the summer months to go to Estes Park, in Colorado, 7500 feet above the sea, and there spend several weeks. In this place he also found some relief; but, nevertheless, had some of the worst attacks he ever had; these, too, in the supposed most favorable climate in the world for asthmatics. He was never able to see that high altitudes were specially beneficial to him, but in a

general way the Colorado climate agreed with him better than an eastern climate, although in the former he experienced at times the worst suffering he ever knew.

It is to be borne in mind that at no time was he free from bronchitis and asthma; he had asthmatic breathing all the time and extreme paroxysms every day and night, which he had to relieve by burning pastiles and taking sedatives, mostly bromides and chloral. Every little while he would have terrible asthmatic spasms, during which it seemed as if he must die. The slightest change in the atmosphere, the irritation of smoke and dust, the eating of certain foods, and even peculiarities of soil, would throw him into a paroxysm. Upon one occasion, when with a party of friends in the mountains, he had such suffering that he was given up to die and the party went into a consideration as to how they should get his remains back to Denver. At another time he was riding with a friend and was taken in a similar manner. He soon became helpless and speechless, struggled violently for breath, grew purple in his face, and the blood flowed from his nose. The friend, frightened beyond measure because of the apparent imminence of death, began to discuss the ways and means of clearing himself of the possible charge of murder. On still another occasion a paroxysm came on, preceded by pain and contraction in the bowels. The asthmatic symptoms became of the most agonizing character, accompanied by blueness of the face, nose-bleed, and complete prostration. The spasm in the abdomen increased until there followed functional paralysis and complete loss of power over both bowels and bladder and it seemed as if he must die in a short time. When *in extremis* and about breathing his last, the spasm relaxed and he gradually regained himself. During these severe attacks there was always the violent wheezing and gasping for breath, the helplessness and speechlessness, the turning black in the face, the flowing of blood from his nose, and he would seemingly go to death's door. The violent struggles for breath would bring on heart failure, cyanosed color of the face and head, cold extremities, and every other indication of extreme depression and irregularity of circulation. Prolonged suffering and the almost constant use of sedatives tended to break down his nervous system and impair the action of his mind. He became very weak, his mental faculties began to fail, as shown by dulness of mind and loss of memory. So constant had been his asthma and suffering that he had come to be known as "the worst asthmatic in Colorado."

All this, despite the fact that he was supposed to be living in the most favorable climate in the world, was using every remedy and means that promised relief, had had the advice of about twenty different physicians, many of whom were the most celebrated in the land and some of the number renowned specialists. An intensely interesting feature of this history is the fact that from first to last he suffered from indigestion, flatulence, and great distention from gas, but its significance was never recognized.

Every severe attack was preceded and accompanied by distress and fulness in the stomach and bowels, and yet these were supposed to be of secondary importance.

When he came under treatment his condition was most pitiable. His skin was pale and dingy, he looked tired and exhausted, his chest was drawn out of shape from so much struggle for breath. He only weighed 128 pounds, and he was so weak that he could walk but a short distance. He was having several asthmatic paroxysms both day and night, and was expectorating about a teacupful of tough, frothy mucus in twenty-four hours.

Physical examination showed that he was greatly wasted in flesh and his chest was more or less out of shape. Auscultation detected the presence of coarse sonorous and fine sibilant râles, seemingly in every bronchial tube and air-cell. The breathing was emphatically asthmatic in all of its characteristics. Percussion note was hyper-resonant all over the chest both posteriorly and anteriorly. The heart was found to be so weak that its sounds were scarcely audible; it appeared to be worn out and feeble from prolonged overwork. Abdominal inspection and palpation revealed the presence of a large amount of gas in the intestine and tenderness over the stomach and lower margin of the liver.

Microscopic study of the blood showed that the red corpuscles were pale, shrunken, and poorly nourished, and that its integrity was further impaired by the presence of a great amount of fibrous filaments. These were beginning to degenerate and mass together without definite outline, as is the case where the fibrous structure of the bronchial tubes is about to break down. There was present also a moderate quantity of yeast germs, the product of fermentation in the stomach and bowels.

The sputa amounted to nearly a teacupful in twenty-four hours, and in consistency was thick, jelly-like, and frothy. By microscopic examination it was found to contain shreds of stringy mucus, epithelia, numerous cells and crystals, and other morbid material. It was in all respects typical of the advanced stage of the worst form of asthma.

Urinary analysis gave important and interesting data. The amount passed was very scanty, so much so that the patient had noticed the fact. It was very heavy, having a specific gravity of 1034; there was a great excess of biliary coloring matter and phosphates. The reaction was highly acid; there was no sugar or albumin. In a general way the urine tended to show that the patient's digestion was greatly out of order, and that there was excessive nerve waste.

In order to find out what to do, and to obtain a clear conception of existing conditions, it was necessary to "work up the case" with exceeding care. Of course, it was easy enough to diagnose bronchial asthma, because every characteristic of the disease was on constant exhibition. The greater object, however, was to diagnose the cause and to understand thoroughly the relations existing between cause and effect. Therefore, besides investigating

all of the signs and symptoms of the disease, as is ordinarily done, the more strictly analytic method, consisting of a study of the products of the system, was adopted. This necessitated, as already seen, a microscopic study of the blood and sputa, and repeated examinations of the quantity and character of the urine. These methods, *diligently and persistently employed*, were the only ones that could afford a clear, accurate, and definite understanding of the extent and manner the organs were performing their functions. It was, indeed, the *only accurate means of determining* to what extent the stomach was digesting food; to what degree the liver and kidneys were doing their work; and just what quality of blood was being made. The information thus obtained from the history and subjective symptoms, and by a repeated study of the blood, urine, and physical signs, tended to show that the real source of asthma was in his stomach. Not only that, but the evidence so obtained also tended to verify the fact, noted in many similar cases, that asthma, with all its attendant spasms and suffering, is more often due to functional or catarrhal disease of the stomach or bowels, or both, than to anything else. Like all other chronic diseases, it is dependent upon conditions constantly prevailing, and, in the majority of instances, these are seated in the gastrointestinal canal, where, as has been said, "the health of the whole body is tempered." Moreover, as will be seen farther along, the result of the treatment was to sustain the conclusions deduced from the history of the case and the methods of diagnosis that were employed.

Having thus fixed upon the seat of the disease, the first rational thing to do in the line of treatment was to obviate one of the evident causes by dispensing with all fermentable foods, such as vegetable, starchy, and saccharine articles, substituting those that would not readily ferment, and employing remedies calculated to restore normal digestion. Past experience in many similar cases had established the fact that the food best calculated to meet this indication was an animal diet in the form of prepared muscle pulp of beef.

Consequently the patient was directed to avoid the fermentable articles of food mentioned above, and to limit himself for a time to a strictly meat diet, consisting of beefsteaks, mutton-chops, and the tender meat of game and poultry. Later he took the prepared muscle pulp, of which he soon ate large quantities with a good appetite and keen relish. With a view to aiding temporarily the stomach to digest his albuminoid diet, he was given a few grains of pepsine after each meal. The change of diet was promptly followed by a disappearance of acidity and flatulence, and distention of his stomach and bowels, and as soon as this was accomplished he began to note more comfort in his breathing. As might be expected, the old asth-

matic habit was rather loath to leave, especially in New York climate. It was necessary, therefore, at first to relieve his urgent spasmotic symptoms, and so he was given a combination of ethereal oil and chloroform, fifteen minimis of the former and two of the latter, to be taken as he needed. In a short time, however, he became so generally relieved that he was enabled to dispense with sedatives and to sleep comfortably all night—a thing he had not done for many years.

As was stated before, his nervous system was worn out from prolonged suffering, the fibrous structure of his lungs had undergone great thickening, and his heart was so weak that its sounds were almost imperceptible. To meet these indications he was given a supporting alterative tonic, composed of cinchona, damiana, and nux vomica, to which were added five grains of English iodide of potassium. For a direct heart tonic he was prescribed one-sixtieth of a grain of digitalin every four hours. Inasmuch as he grew stronger rapidly, digitalin was soon withdrawn. He had taken all of these remedies before, as well as many others, but to no avail, for the reason that the real cause of his asthma had never been removed.

It is interesting to note, too, that none of the usual "asthmatic sedatives" and expectorant remedies, like grindelia, opium, bromides, chloral, lobelia, squills, and ipecac, were employed from first to last. Medicines were adhered to only in so far as they relieved spasmotic action, improved the powers of digestion, sustained the action of the heart, and increased the power of the nervous system. The conviction adhered to was that a removal of the cause would be followed by a removal of the effect, and time verified both the conviction and the prophecy.

In addition to the few remedies used he was advised to drink a pint of hot water two hours before each meal and upon going to bed. The object was to cleanse his stomach of mucus, to stimulate the secretory and excretory glands, and thus to eliminate all morbid material from his system. The hot water accomplished this desired effect, as shown by the elimination found in the urine, and by the rapid improvement that ensued. Besides, the hot water proved to be very grateful to his system, as it caused a warm glow and free action of the skin.

As a result of removing the cause and adopting the principles of treatment above outlined, improvement was prompt and rapid. In less than a month his asthmatic spasms had almost passed away, and, although in a climate that formerly caused intolerable distress inside of twenty-four hours, he was more uniformly comfortable than he had been for many years. Using his own words, written one month after he came under treatment, "At first I had a great deal of asthma, but it has gradually grown less, and I am now having less in New York than in the most favored locality in the mountain parks of Colorado."

In addition to the great improvement, or rather subsidence, of the asthmatic symptoms, there has

been a corresponding gain in his general health. His blood has vastly improved, as shown by the decrease of morbid material and increase in the number, size, and color of the red corpuscles. His urine is much greater in quantity, is practically free from phosphates and biliary coloring matter, and has a specific gravity of about 1015. His heart is much stronger, and the sounds are again well defined. His appetite is so good that he craves nearly a pound of animal food at a meal; and, best of all, is now able to digest and assimilate such a large amount. And his nervous system has been so far restored that his memory is displaying marked improvement. All of his faculties are regaining their finer sensibilities, and he is enabled to sleep quietly and soundly during seven or eight hours every night.

BLACK OXIDE OF MANGANESE IN DYSMENORRHEA.

BY CHARLES E. SCOTT, B.S., M.D.,
OF WICHITA, KANSAS.

I DESIRE to call attention to the use of the binoxide of manganese in those cases of dysmenorrhœa characterized by a more or less scanty menstruation, associated with pain, and which are *not* complicated with any well-definable local, inflammatory, or organic lesion to which can be traced the cause of the abnormal menstruation.

We are told by most of our best authorities that nothing can be done in the treatment of menstrual disorders by the administration of drugs, that they are of doubtful utility, and that in their stead we should resort to local treatment, tonics, and the enforcement of a strict hygiene. That there are certain conditions in which, by the proper differential diagnosis, we can, with great benefit, use certain drugs, I will try to show by calling attention to two selected cases.

CASE IV.—K. C., aged twenty-three, married; multiparous. Had always been in good health. Began menstruating at seventeen, and was regular up to two months before consulting me, at which time she had gone out while menstruating. The day was damp and disagreeable; she got her feet wet, and on returning home discovered that her menstruation had ceased. She suffered somewhat at the time, but felt well in a day or so. On the arrival of the next period she had severe dysmenorrhœa, with scanty flow. The same *rôle* of symptoms was repeated, with increasing severity, for the next two or three months, when she could stand the suffering no longer, and consulted me. I could find nothing the matter with the uterus to warrant such a state of affairs, and ordered black oxide of manganese gr. iv twice a day, half an hour after meals, for the next thirty days. Her next period arrived, and she was free from all disagreeable symptoms. I continued the black oxide for the next two months in two-grain pills, since which time (nearly a year) she has taken no medicine for this trouble, and now she menstruates regularly and is free from pain.

CASE VIII. was a lady, unmarried, aged nineteen, rather anaemic. Began menstruating at fifteen; never had been "regular," and the periods were associated with much pain; so much so, in fact, that she was compelled to go to bed a day before the flow appeared and remain there until its cessation, resorting to anodyne applications and morphia hypodermatically. Her flow would occur every two or three weeks, lasting for from three to five days. Did not obtain permission for local examination, but she complained of slight leucorrhœa the day after her menstruation had ceased, also had slight ovarian tenderness over left ovary. I prescribed elix. quin., ferri et strychn. three times a day, also two-grain pills of the black oxide twice daily, to be given as in the preceding case. Under this treatment her condition improved very much in the next sixty days, when I ordered the elixir to be discontinued and retained only the black oxide. The latter was continued another sixty days, when it, too, was left off, and she now (and for the past four months) is menstruating regularly, and is free from pain.

I might enumerate several other cases in which the binoxide has been used with equally gratifying results, but these two will suffice. Allow me to add, however, that during all the time that my patients have taken the binoxide they did not complain of any disagreeable symptoms arising from its administration.

Before resorting to the manganese, I had been in the habit of advising the use of the permanganate of potassium, but the unpleasant symptoms arising from its use were too constant, and I am glad to say that in the manganese dioxide we have a remedy which, in an experience of over forty cases, has failed to show any unpleasantness.

407 EAST DOUGLAS AVENUE.

HOSPITAL NOTES.

JEFFERSON MEDICAL COLLEGE HOSPITAL, PHILADELPHIA.

SERVICE OF J. M. DA COSTA, M.D.

(Reported by E. P. HERSHHEY, M.D., Clinical Assistant.)

GUSTATORY PARALYSIS (PERIPHERAL).

E. H., stat. thirty-nine, domestic. Noticed, three months ago, that articles of food, save those that were pungent and affected the olfactory nerve, were tasteless. She first observed that cream had no taste; soon after, sweets. From a general survey of the patient we find that she is not anaemic, has a good color, and her bowels are regular. Her tongue is red at the edges. No blue line on the gums. Has occasional headache, but always assignable to a cause. Has a poor appetite, which she attributes to the fact that food has no taste to her. She is not hysterical.

Testing the sense of taste: with a camel's-hair brush, we paint the tip and posterior portion of the tongue with a solution of saccharin, impressing upon her mind that it is bitter; she does not perceive the sweetness. Next, upon

the same portions we paint a solution of strychnia (gr. $\frac{1}{2}$) with no effect. On the sides of the tongue we paint an acid—dilute acetic acid—and a saturated solution of sodium chloride, neither of which was tasted. We thus have demonstrated the entire absence of the sense of taste. This is very rare; but it is necessary for us to look further, and see if we can find a loss elsewhere. The vision is good, the eye-grounds are normal; no weeping. Hearing is good. There is no palsy of the muscles of the face. She is able to whistle, the muscles called into play being normal. There is no deviation from the median line when the tongue is protruded. Sensation, tested with the aesthesiometer, is normal, both in the track of the supra- and infra-orbital nerves, and on the tongue.

The question that arises is, What nerve or nerves are involved? The lingual branch of the fifth cranial nerve is the one that has most to do with the sense of taste; it supplies the papillæ and mucous membrane of the tongue. The glosso-pharyngeal supplies it with power of motion; this nerve goes to the back of the tongue, and supplies it with sensation. The hypo-glossus need not be considered. The lingual branch of the fifth goes to the anterior two-thirds of the tongue, and the chorda tympani is joined to this lingual branch. Were the lesion in the glosso-pharyngeal, the loss of taste would be at the back of the tongue only. Were it in the lingual branch of the fifth, the anterior two-thirds of the tongue alone would be affected. Assuming that both the lingual and glosso-pharyngeal are affected, there would necessarily be impairment in motion, but this does not exist. Again, assuming that the lesion lies in the floor of the fourth ventricle, where the nerves come together, other nerves that have their origin there would show signs of change. Taste is the only part of the fifth nerve affected.

One other point to be considered is, Does the lesion lie in the cortical centre of taste? This centre is a very small spot, and should it be the origin of the disorder, unquestionably the olfactory nerve would be involved. The loss of taste is due to peripheral causes.

Treatment.—Galvanism, five cells, one electrode to the back of the neck, the other over the tongue. In order to stimulate the nerves she will be given strychnia sulph. gr. $\frac{1}{10}$ t. d. Also a stimulating mouth-wash of capsicum.

The patient, three months after treatment, had partly regained taste, her general health is good, but her food is still more or less tasteless. The case is yet under observation.

MEDICAL PROGRESS.

Saccharin for Aphthæ.—Since it has been established that saccharin possesses the properties of counteracting intestinal fermentation it has been largely used as an antiseptic remedy. DR. MAURICE FOURCIER, states in the *Revue Gén. de Clin. et de Théráp.*, No. 11, that he has used it successfully in treating ten cases of aphthæ, the affected parts being painted with a saccharin solution. In eight cases the affection disappeared in from twenty-four to thirty-six hours; only in two cases did the time required for a cure extend over three days, which was due to the imperfect application of the remedy.

The following is the solution used by the author:

R.—Saccharin	1 part.
Alcohol	50 parts.—M.

A coffee-spoonful of this is added to a wine-glassful of water and the affected parts painted with the solution five times daily. A concentrated solution should not be used, as it might prove harmful. The druggist who prepared the above solution tested the same frequently by dipping his finger first into the mixture and then into his mouth. On the evening of the same day he observed a sensation of burning in his entire buccal cavity, which on the following day was covered with an aphthous eruption; these latter lasted five days, when it disappeared without treatment.—*Wiener med. Presse*, No. 15.

Diphtheria treated Antiseptically with Quinoline.—DR. DORNAT (*Gazette hebdom.*, April 19, 1889,) recommends quinoline for the treatment of diphtheria of the mouth and throat. It can be used locally in the form of gargles or by direct applications.

As a gargle the following formula is recommended:

R.—Quinoline	grains x.
Alcohol, 90 per cent.	3ij.
Water (distilled)	3jxss.
Essence of mint	gtt. j.—M.

Direct application—the following to be applied with a camel's-hair brush (not too soft) to the surface of the pseudo-membranes:

R.—Quinoline	grains xv.
Alcohol, 90 per cent.	
Water (distilled)	aa 3vjss.—M.

Antipyrin, Diabetes, and Cataract.—The interesting communication made by DRs. GERMAIN SÉE and GLEY at the Academy of Sciences in February last on the results with antipyrin on diabetic patients, induced M. Panas to try the efficacy of antipyrin in the treatment of diabetes in connection with cataract. Two persons were treated by him: one a man aged thirty-eight, affected with bilateral cataract of two years' standing, and who was at the same time diabetic; the other was a woman of seventy-three years, of a delicate constitution, diabetic for six years, very nervous, and who presented a double cataract, that in the left eye being complete. After the administration of antipyrin in doses of 45 grains per day during one week, the sugar fell from 5 drachms to 1 drachm. It was under these conditions that M. Panas proceeded to operate for cataract, at the same time recommending the patient to continue to take 30 grains of antipyrin per day. From these cases M. Panas concluded: 1. That antipyrin possessed an antiglycogenic action both prompt and efficacious. 2. That it has succeeded in those cases in which neither the diet nor the drugs employed had succeeded in reducing the proportion of the glucose below a given quantity. 3. That for it to be efficacious it is necessary that the daily dose at first should consist of 45 grains. 4. That the effect became evident even when the patients were allowed to continue a moderate proportion of farinaceous substances. Dr. Albert Robin, well known for his researches in connection with antipyrin and other drugs of that class, said that he did not believe that one could distinctly say that antipyrin did not suit such or such diabetic patients, but when the treatment is commenced, the appearance of certain symptoms should be an indication to suspend the remedy without delay. He then

named the indications and contra-indications of antipyrin in the treatment of this affection. In conclusion, he said that antipyrin can render the greatest service to a very large number of diabetic subjects, and it is destined to take an important place in their treatment; but, like all active drugs, it is a two-edged weapon, which one ought to know how to handle with ability, and which it would be imprudent to employ indiscriminately in all cases.—*Lancet*, April 20, 1889.

Hyoscine.—DR. OTTO DOMBLUTH (*Berliner klin. Wochenschr.*, No. 49, December 3, 1888) reports the results of the use of hyoscine in the treatment of the insane in the asylum at Brieg, in the district of Breslau. He employed usually, and exclusively in his later practice, the hydrochlorate, giving it by subcutaneous injection in doses ranging from 0.2 to 1.5 mgs. (or from about $\frac{1}{50}$ grain to $\frac{1}{10}$ gr.) and administered by the mouth in doses of $\frac{1}{10}$ to $\frac{1}{5}$ of a grain. He found the former method in every way the most effective, and he gives a table showing the comparative effects of different doses administered in both ways, in various forms of insanity. For example, in sixteen cases of epileptic insanity, out of fifty-nine injections of hyoscine in quantities varying from $\frac{1}{50}$ to $\frac{1}{10}$ grain, only four were ineffective, and in fifty-one complete quieting of the patient for twelve hours or more was obtained, while with doses of from $\frac{1}{4}$ to $\frac{1}{2}$ grain given by the mouth over 25 per cent. were failures. The inconvenient symptoms of temporary paralysis, disturbance of accommodation, etc., were also more pronounced after hypodermatic doses, but in no case were sequelae observed that called for special caution in any one direction. The appetite was never disordered, and he did not find any increased tolerance of the drug requiring increasing doses, even after it had been used a hundred times or more. Contrary to the experience of Kuhlwetter (*Irrenfreund*, 1887, No. 7), the author found that in his cases the injections were not especially painful.

Dr. Dombluth found that distinctive tendencies were only diminished by the drug in the acutely agitated patients, but that untidy habits were usually benefited by it. In closing his paper he shows that, owing to the smallness of the dose required, its employment is not at all counterindicated by its high price.—*American Journal of Insanity*, April, 1889.

Naphthol and its Administration.—This drug can be administered in the form of lotions, mouth-washes, injections, liniments, and antiseptic as well as disinfectant lotions. Camphor and alcohol are the best vehicles for its administration.

1. **Lotions.** The following formula is the best:

R.—Naphthol β	1 part.
Alcohol 60°	1000 parts.—M.

To be applied to regions covered with hair which one desires to render aseptic.

Or:

R.—Naphthol β	10 to 15 parts.
Alcohol 60°	1000 " —M.

This forms a stronger solution, and is used to render aseptic denuded cutaneous surfaces.

2. **Injections.** This solution is to be prepared by heat and to be kept at a medium temperature. Before using

it the syringe should be warmed. The following is the formula:

R.—Naphthol β	10 parts.
Alcohol 90°	80 "
Water (distilled)	120 " —M.

3. *Mouth-washes.* For toilet purposes a few drops of the following should be added to a glass of water:

R.—Eau de Botot	600 parts.
Naphthol β	1 part.—M.

4. *Liniments.* For this purpose camphorated naphthol is used; this is obtained by triturating the following until a liquid is obtained:

R.—Powdered camphor	2 parts.
Powdered naphthol β	1 part.—M.

—*Gazette hebdomadaire*, April 19, 1889.

Milkmaid's Cramp.—DR. REMAK was recently enabled to bring a case of true milkmaid's cramp before the Medical Society of Berlin. This malady was originally described and classified by Basedow. It is a form of muscular incoordination analogous to that of writers, ironers, and cigarette-makers, and involves principally the median and superficial nerves. In Dr. Remak's case both hands were affected with spasmodic contractions on attempting any kind of movement, but particularly that of prehension. The patient had for some weeks been obliged to milk uninterruptedly for several hours daily, and is now quite incapacitated from following her occupation. As a general rule, the symptoms take a much longer time to develop.—*Medical Press*, Feb. 20, 1889.

Edema as a Diagnostic Sign in Carcinoma of the Stomach.

—DR. C. BAERT, of Brussels, writing in *La Clinique* on cancer of the stomach, calls attention to the frequency with which edema of the ankles is met with in this affection after it has lasted a few months—a diagnostic aid which is by no means new, but is, he thinks, in danger of being too much overlooked at the present day. He gives a number of cases recently occurring in the various hospitals in Brussels in which edema was present. In one of these cases the edema came on as early as three months after the first symptoms of the affection made their appearance; in two other cases it was noticed after four months; but in most of the other instances it was delayed till the lapse of from six months to a year after the onset. In one case, where there was no evident cause to which to attribute the loss of appetite and the wasting complained of by the patient, Professor Cartentier, noticing some edema of the ankle, diagnosed carcinoma of the stomach, and found his diagnosis confirmed by the appearance a month afterward of all the usual signs of the affection. Several of the cases presented a marked increase in the nitrogen excreted in the urine. With regard to the deficiency or absence of hydrochloric acid in the stomach in cancer of that organ, M. Baert admits that it is usual, but agrees with Wolff and Ewald in saying that this sign is by no means peculiar to cancer, as it is found in other gastric affections.—*Lancet*, April 13, 1889.

The Treatment of Sciatica by Local Freezing of the Skin.

This mode of treatment has been recommended by Dr.

Debore, who sprayed the affected surface with methyl-chloride. This drug as well as Dr. Debore's apparatus being somewhat difficult to obtain, DR. MILOTTI has proposed the use of sulphuric ether applied with a Richardson spray; the results were very satisfactory.

Professor Ughetti, of Catania, succeeded in curing six or seven cases of sciatica by this method. DR. G. ALONZO reports in the *Riforma medica*, No. 53, the case of a thirty-two-year-old woman, a sufferer from severe sciatica, who, after receiving three applications of the ether spray, felt much improved and was enabled for the first time in many months to obtain a refreshing sleep. After the further application of six sprayings she was well able to walk about—in fact, was entirely cured. The duration of each application was from twelve to fifteen minutes, the quantity of ether necessary for each séance amounting to something like six and a half ounces. DR. ALONZO regards the application of this remedy as of great therapeutic value, and thinks it should not be omitted in a single obstinate case.—*Wiener med. Presse*, March 24, 1889.

The Disinfecting Action of Steam.—According to some new researches made by VON ESMARCH on the action of steam as a disinfectant, it would appear that the effects in relation to the destruction of bacteria depend not so much upon the temperature as upon the degree of saturation of the steam. If there is air with it, the power of destroying organic germs is very much diminished. Thus, in experimenting on the spores of malignant pus-tule, von Esmarch found that, while superheated steam which was not in a condition of saturation at a temperature of 248° F. was unable to destroy the spores in half an hour, saturated steam at 212° F. destroyed them in from five to ten minutes.—*Lancet*, April 13, 1889.

Picric Acid in the Treatment of Erysipelas.—DR. CALVELLI (*Revue Gén. de Clin. et de Théráp.*, March 28, 1889) writes that he treats erysipelas by painting the diseased surface five or six times daily with the following solution:

R.—Picric acid	23 grains.
Water	3 viij.—M.

Combining with this internal injections of quinine he obtains diminution of the swelling and pain in from twelve to twenty-four hours.

Antiseptic Sutures.—It would appear that there is a growing tendency amongst surgeons to restrict the use of catgut as a suture material, and revert, where practicable, to the more easily disinfected silk threads. The observations of KOCHER (*Correspondenzblatt für schweizer Aerzte*, 1888) upon this subject cannot fail to prove of interest to the thoughtful surgeon. This distinguished observer has for a long time past tried experiments with a view to perfect the sterilization of animal tissues used for the purpose of sutures and ligatures—the fluid hitherto recommended by him for keeping the gut in being the essential oil of juniper—sutures prepared in this way being very nice and soft to handle, and in the majority of cases aseptic; but a series of cases in which the wounds did not follow an aseptic course suggested from their similarity a common source of infection, and a thorough revision of materials employed narrowed the

question down to the catgut used at the clinic for sutures and ligatures. A comparison being made with this catgut and sterilized silk showed that it was the former that was at fault. Kocher states that he has long been impressed with the difficulties in the way of rendering aseptic catgut and similar animal substances, as the fat in the interstices of the tissue prevents the thorough saturation by antiseptic fluids, and the tissue is unsuitable for the best of all sterilizing agents—viz., heat.

The well-known case of Volkmann, in which catgut which had been kept for months in a twenty per cent. solution of carbolic acid infected a patient with true anthrax, is perhaps the most significant observation in connection with this subject, and serves to accentuate the fact that a perfectly reliable animal absorbable ligature is yet to be found.—*Dublin Journal of Medical Science*, April 1889.

The Local Treatment of Diphtheria by Salicylic Acid.—The treatment advocated by D'ESPINE (*Revue Méd. de la Suisse Romande*, Jan. 20, 1889) has its *raison d'être* in the discovery by Löffler of the existence of a pathogenic bacillus in diphtheria, which, coming from outside the body, implants itself on the mucous surfaces and leads to the production of the characteristic membrane. The important point regarding the bacillus is, that the symptoms met with in diphtheria—prostration, low temperature, feeble circulation, hemorrhage, and albuminuria, are not due to the entrance of the bacillus into the circulation, but to the absorption of septic products which are formed at the points affected. An accompanying febrile condition is probably due to the passage into the circulation of streptococci, which are usually found in the false membrane along with the bacillus. D'Espine's researches support Löffler's views. He asserts that diphtheria is at first a local infection; that the false membrane is a sign of this, and not of an infection of the blood by microbes; and that the general symptoms are due to a septic intoxication of the blood, the septic products being formed and absorbed at the seat of the false membrane.

With E. de Marignac he has investigated the germicidal action of various drugs used in the treatment of diphtheria. Benzoate of soda (5-10 per cent.), chlorate of potash (5 per cent.), boracic acid (4 per cent.), sulphide of sodium (2½ and 5 per cent.) placed in contact with the bacillus for five minutes, did not arrest its growth; but corrosive sublimate (1 in 8000), carbolic acid (1 in 50), salicylic acid (1 in 2000), chloral (1 in 100), permanganate of potash (1 in 2000) gave a positive result. Of these the author prefers salicylic acid (1.5 or 2 per 1000), which in this dilution may be used freely. Some of the other germicides are not suitable except when used with a brush, on account of risk from absorption. The main points in d'Espine's paper may be summarized as follows:

(1) The diagnosis should be made early. This may usually be accomplished by examining microscopically a piece of the false membrane, and then by staining and finding the bacillus, which is slightly concentric in shape and about the same length as the tubercle bacillus, but two or three times as broad. After a time, the bacilli are difficult to find in the pultaceous mass, but then the appearance of the membrane itself is characteristic.

(2) Local treatment should precede and accompany general treatment, and the earlier it is used, the better is

the chance of preventing the absorption of the toxic products of the bacillus. All the diphtheritic surfaces must be reached by the solution used. The mouth should be irrigated or syringed out with a solution of salicylic acid (1.5 or 2 per 1000) every hour or two hours, according to the symptoms, or the patient may gargle when possible, and several tablespoonfuls are to be poured into each nostril. Two or three pints of the solution may be used in twenty-four hours; but in the case of a child, where a large quantity may be swallowed, it is well to reduce the strength to 1 in 1000 or 1500. When, however, the false membrane is widely spread and thick, this treatment will not suffice. The patches must then be painted with something which will soften and disintegrate the membrane, and for this purpose citron juice, chloral and glycerine (1 in 5), corrosive sublimate (1 in 2000), carbolic acid (1 in 50), or papaine or papyotide may be used. Rough manipulation must be avoided, otherwise the irritation will increase the fibrinous exudation, and increased absorption will occur.

(3) Debilitating drugs should not be given; prostration must be treated by food, stimulants, and iron.

The results obtained from this treatment by d'Espine have been very satisfactory.

Salicylic acid may also be used as a prophylactic when diphtheria is prevalent, and in scarlatinal angina. In cases of tracheotomy in diphtheria, five or ten drops of a solution (1.5 in 1000) may be dropped into the canula every ten or fifteen minutes.

The author disclaims all idea of originality, except as regards method of irrigation. He quotes a number of opinions, both favorable and unfavorable, as to the efficacy of salicylic acid.

It is interesting to notice that some years before Löffler's discovery of the bacillus, a mode of treatment of diphtheria and scarlet fever on the same lines as that advocated by M. d'Espine in this paper, was recommended by Dr. Pownall, of Chorlton-cum-Hardy, in a letter to the *Lancet*. His formula was:

R.—Salicylic acid	1-2 dr.
Gum tragacanth	1 oz.
Syrup	½ oz.
Tincture of orange	½ oz.
Water	to 6 oz.—M.

A tablespoonful every two hours, alternately with iron, if necessary.

The drug being in suspension, has a local as well as a constitutional effect.

Iodine Applications in Erysipelas.—DR. TICHOMIROV, writing in a Russian military medical journal, recommends the employment of tincture of iodine as an external application in erysipelas, even in cases where bullæ have formed. He paints the iodine over the affected part and its vicinity three or four times a day. The irritation caused by the treatment is easily allayed by the application of a little camphorated oil. Usually he found a couple of days sufficient to reduce the infiltration and to bring the temperature down to normal. A similar mode of treatment he also considers very beneficial in cases of boils and carbuncle. Even after these have broken, he recommends that the iodine should still be applied, the wound being cleansed from pus and a dressing of cotton-wool applied.—*Lancet*, April 6, 1889.

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SATURDAY, MAY 11, 1889.

THE VALUE OF BINIODIDE OF MERCURY AS AN ANTISEPTIC.

THE conclusion reached by Koch, in his article on disinfection and antiseptics in the *Mittheilungen aus dem k. Gesundheitsamte*, vol. i., 1881, p. 264, that a single application of a very dilute solution, 1-1000 to 1-5000, of mercuric bichloride is sufficient to destroy the most resistant organism in a few minutes, and that a solution of 1-20,000 is sufficient, if the contact be prolonged, has given this substance a world-wide use in all branches of medicine, particularly because surgeons have practically found Koch's experimental deductions to be true.

Until recently, however, very few practitioners have recognized the fact, to which this same investigator called attention, and which has been particularly brought forward by his pupil Laplace in the *Berliner klinische Wochenschrift* for October, 1887; namely, that in the presence of albuminous substances an albuminate is formed with the mercury which renders the dressing useless, save in that it does not form a fruitful spot in which germs may multiply.

Klein (*Fifteenth Annual Report of Local Government Board*, 1886, p. 155) goes even further than this, and asserts that distilled water should always be the solvent used in making this preparation, since the salt may otherwise unite with proteids or other substances and become useless.

Although we are now accustomed to use tartaric acid in our antiseptic fluids in order to avoid such

accidents, the danger of the formation of albuminates nevertheless exists to a considerable extent, sufficiently, at least, to warrant the use of other preparations of mercury, even if their antiseptic power be somewhat less than the bichloride, and if they do not bear similar relations to the albumins.

For some time past the biniodide of mercury has been thought of and been tried in this country and abroad. Recently, in a communication in the *Proceedings of the Royal Society of Edinburgh*, vol. xv. p. 235, DR. G. SIMS WOODHEAD has given the results of a series of experiments carried out with the red iodide of mercury, using as control tests the bichloride in solutions of the same strength as the more recently employed salt. The first part of his research was devoted to the determination of the action of albumins on these salts, or blood being employed. The results reached indicate that Laplace and Koch are entirely correct in their statements, and that corrosive sublimate may be rendered useless in the presence of albumin, an insoluble precipitate of the albuminate of mercury being formed. On the other hand, the biniodide is entirely free from these disadvantages, albuminous solutions of this salt remaining clear for days. The solution is to be made by dissolving fifteen and a half grains of the salt with a slight excess of iodide of potash in thirty-four ounces of distilled water. Such a solution is stable, but is not one, in reality, of biniodide of mercury, but of the double iodide of potash and mercury.

Turning from this question to the effect upon germs, Woodhead placed the bichloride solution and blood in a dish exposed to the air, and also exposed in a similar manner and in a corresponding place the biniodide solution and blood. As a control experiment a third jar holding the same quantity of blood and distilled water was put alongside the others. At the end of six weeks there were a few micrococci and bacilli in the bichloride solution, its surface was covered by a luxuriant growth of *penicillium glaucum*, but there was no odor on stirring the liquid.

In direct opposition to this was the state of the biniodide solution, which was absolutely free from any change. In the control jar, of water and blood, the odor was exceedingly bad and the fluid swarmed with microorganisms.

By the addition of tartaric acid or common salt to a bichloride solution we increase its absorbability into the body and increase the danger of a systemic

effect. Here again, however, the biniodide excels the bichloride, for, as has been pointed out by CASH, in the *Local Government Board Report* (supplement), 1885, p. 186, guinea-pigs are much more tolerant of it than of the bichloride, while most pharmacologists agree that the lethal dose of the biniodide is nearly twice as great as of the bichloride. It is, however, worthy of note that should the former be taken in toxic dose none of the antidotes to the latter would be effective.

From these studies, therefore, we are in a position to make thorough trials of the biniodide as an anti-septic and to replace the bichloride with it if it prove practically useful.

Very recently DR. BERNARDY has used it in this city with very good results, and further trials will certainly be made. Woodhead has found, too, that such a solution is very useful in the preservation of specimens.

RESULTS OF FOOD AND DRUG INSPECTION IN NEW JERSEY.

THE salutary effects of the rigid enforcement of the laws of New Jersey for the prevention of the adulteration of food and drugs are shown by the Report of the Dairy Commissioner of the State for 1888. The amount of oleomargarine sold during the year has been very small, and the transactions in this article have been carried on strictly in accordance with the legal provisions. Milk inspection has covered all parts of the State, and the result shows the milk supply to be in excellent condition. Cases of adulteration of this article have steadily diminished, until in this year they have been fewer than ever before.

The examination of various foods and drugs has only recently been instituted, and consequently the deterring influence of warnings and prosecutions has scarcely had sufficient time to work a change in practices long in vogue. Of the numerous articles of food analyzed during the year, over forty-eight per cent. were found to be adulterated. It is true that the adulterants used are rarely injurious to health, but they are fraudulent, and the purchaser of sophisticated articles is not only deceived but he is robbed of a portion of his purchase money. The substitution of adulterated medicinal drugs for pure articles is a heinous offence, as it may place life in peril, and it should therefore be punished with extreme severity.

The people of New Jersey are to be congratulated upon the possession of laws against food adulteration

and the efficient manner in which they are administered under the superintendence of Dr. Newton. In the absence of legislation on this important subject, Pennsylvania presents a striking contrast to her sister State. The legislature has recently ignored a plea for milk inspection for a populous section of the State and has also defeated a praiseworthy attempt to secure legislation against food adulteration throughout the Commonwealth. Comment is unnecessary.

THE Johns Hopkins Hospital, of Baltimore, was formally opened by the Governor of Maryland last Tuesday, in the presence of a brilliant audience, and this act marks an epoch in the history of medicine in this country. The munificent endowment of over three millions of dollars which the philanthropy of Johns Hopkins placed in the hands of his trustees; and their intelligent and careful management by which they have constructed and equipped this house of mercy without taking a dollar from the principal placed at their disposal, but actually increasing it by \$113,000, have resulted in giving to the city of Baltimore a hospital which, in the excellence of its construction, perfection of its arrangement, and completeness of its appointments is without an equal on this continent, and probably in the world.

A full description of the seventeen separate buildings was given in THE MEDICAL NEWS of last week, and to-day we have the pleasure of laying before our readers the admirable address of Dr. Billings delivered at the formal opening. Dr. Billings is well qualified to speak of the hospital and its aims, for, from its very beginning, more than thirteen years ago, he has been the confidential adviser of the Trustees in the planning and construction of the hospital and in its organization.

The broad intelligence which has planned this hospital, its liberal endowment, and the character of work which it stands ready to perform, are sure to render it a potent factor in the advancement of medical science and of medical education in this country.

THE volume of *Transactions of the Congress of American Physicians and Surgeons*, held at Washington last autumn, has just been issued. It forms a very handsome octavo volume of 386 pages, and its publication has been ably supervised by the Secretary of the Congress, Dr. W. H. Carmalt, of New Haven. The volume contains the elaborate and able

papers on the "Diagnosis and Treatment, Medical and Surgical, of Intestinal Obstruction," by Drs. Fitz and Senn, with the discussion elicited, and on "Brain Localization and Surgery," by Drs. Mills and Park, and the discussion following by Drs. Starr, Ferrier, Horsley, Keen, and Weir. The concluding paper is the address of the President, Dr. Billings, on "Medical Museums." The volume constitutes a notable addition to our literature and is a fitting memorial of the meeting it records.

THE American Association of Genito-urinary Surgeons will hold their next annual meeting at Newport on May 21st, 22d, and 23d.

THE Twenty-second Annual Meeting of the Canadian Medical Association will be held at Banff, N. W. T., on the 12th, 13th, and 14th of August next, under the Presidency of Dr. George Ross, of Montreal.

The Canadian Pacific Railway Company has agreed to carry members and delegates and members of their families at the following rates: From points in Ontario and Quebec, to Banff and return at \$95 each, including a double berth in sleeping car for each person, and meals in the dining cars on the way west from Montreal or Toronto and back, and four days' living at the Banff Hotel. The passage tickets will be made good from and to any points on the Canadian Pacific Railway, in either Ontario or Quebec, to Montreal or Toronto, but berths and meals will begin at these two places only.

Owing to the provisions of the Interstate Commerce Law, it will be impossible to get reduced rates from points in the United States, with the exception of St. Paul, Minn., from which the following rate is offered: \$60 to Banff and return, including meals and sleeping car accommodation *between Winnipeg and Banff only*. Delegates from the United States are therefore requested to make their own arrangements between their homes and points on the Canadian Pacific Railway.

It is intended that the party shall leave Montreal on the evening of the 6th of August, by the regular Pacific express and arrive in Winnipeg on the 9th, and stop over one day there: leaving Winnipeg on the 10th of August, they will arrive at Banff early on the morning of Monday, August 12th. The meeting of the Association will then be held in the hotel on the 12th, 13th and 14th, after which the members of the party can either return at their convenience

or take a trip to the coast, leaving early the following morning (August 16th), for which special terms have been arranged as follows: From Banff to Victoria and return, not including meals or berths, \$20, or \$30 including meals in the dining car and berths. The tickets for this excursion will be on sale at Banff to members and delegates and their families only.

The special tickets issued by the Canadian Pacific Railway to Banff and return will be good for sixty days, and the holders will be allowed stop-over privileges on the Canadian Pacific line at pleasure.

In addition to the members of the Canadian Medical Association a cordial invitation is extended to all members of the regular profession in good standing in the Dominion of Canada, the United States, and Great Britain, to whom the necessary certificates will be sent on application to Dr. James Bell, General Secretary, 53 Union Avenue, Montreal.

DR. HARRISON ALLEN, of Philadelphia, will deliver the next Toner lecture at the National Museum in Washington on the evening of the 29th of this month. His subject will be "The Clinical Study of the Skull, especially undertaken in Connection with the Morbid Conditions of the Jaws and Nasal Chambers."

A VINDICATION of the report made some five years ago of a Committee of the New York Academy of Medicine in the matter of the Paris diploma of Dr. Fordyce Barker has just come, in a most singular way, from the Sandwich Islands. Dr. Prince A. Morrow, in a letter to the *Medical Record* (April 28th), states that at Honolulu he met a Dr. George H. Troussseau, a son of the famous Paris physician, who, in narrating some reminiscences of his Paris life, mentioned having met at his father's dinner table Dr. Fordyce Barker, and he distinctly recalled his father mentioning there the fact that the Faculté de Médecine had conferred its diploma upon Dr. Barker. He also stated that he saw the diploma and, at his father's request, he personally carried it to Dr. Barker's hotel and left it there for him.

Dr. Troussseau said that it "was a matter of regret to him that he had not heard of the charge against Dr. Barker until many months after it was brought before the Academy, and thus had not the opportunity to refute it, which he would gladly have done."

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, May 2, 1889.

THE PRESIDENT, ALFRED L. LOOMIS, M.D.,
IN THE CHAIR.

DR. W. B. JAMES read a paper on

THE RELATION OF THE TUBERCLE BACILLUS TO ITS
ETIOLOGY.

Having stated that the unity and specific nature of pulmonary tuberculosis had been established before the discovery of the tubercle bacillus in 1882, he proceeded to give a *résumé* of the conclusions Koch arrived at from his researches. In the seven years which had elapsed since this discovery, he went on to say, an enormous number of investigations had been carried on, and their results had been to confirm completely and establish the correctness of Koch's conclusions. It was also fairly well established now that the tuberculous process is capable of setting up inflammation in adjacent tissues which may be either acute or chronic.

By pulmonary phthisis he understood a tuberculous inflammation of the lungs, and he considered, therefore, any secondary and contributing cause or causes as unnecessary. Clinical experience taught that different individuals respond very differently to tuberculosis infection, and also that the same individual responds differently to it at different times. In this connection he referred to Trudeau's experiments with animals inoculated with tuberculous virus and exposed to different forms of environment, the results being very different in those closely confined in quarters with bad hygienic conditions, from the results in those allowed free exercise in the open air. In the dead-house of the New York Hospital he had been struck with the large number of individuals whose lungs presented lesions which showed that they had at one time been the subjects of phthisis and had recovered from it.

Whether or not any previous lesion of the lungs was necessary for the development of tuberculosis he did not think was established. The sum of clinical experience seemed to indicate that tuberculosis develops more readily when there has been such a previous lesion, but that in many cases there is no previous lesion whatever. The conditions on which tuberculous infection in any given instance seemed to depend are, *first*, the number of the germs, and, *second*, the condition of the microbes as regards vitality. Other things being equal, therefore, the greater the number of bacilli and the greater the activity of the virus, the stronger would be the chance of infection.

Another point of interest was in regard to the channel of infection. Our knowledge of the lymphatic system of the lungs was, unfortunately, very limited, and the question whether the infection was contracted by inhalation or in other ways, he felt compelled to leave untouched. To sum up, he said, the only factor necessary for the production of pulmonary phthisis is the bacillus tuberculosis or its spores.

DR. J. WEST ROOSEVELT read a paper on

THE RELATION OF THE TUBERCLE BACILLUS TO THE
EARLY DIAGNOSIS AND PROGNOSIS OF PHTHISIS.

(See page 510.)

DR. JAMES TYSON, of Philadelphia, who had been invited to participate in the discussion, said that he was in entire agreement with his predecessor in the discussion, and remarked that it is now so generally conceded that the bacillus of tuberculosis is the essential cause of that disease, and especially of pulmonary consumption, that for some reasons it seemed scarcely worth while to repeat the argument therefor. It is, however, always important not to lose sight of the ground of adoption of any truth, and especially is this the case with truths in medical science; and the more so, of course, when the conditions are difficult to establish. It is further important to keep reasons fresh in memory, lest we grow to accept views too readily, for it is better to be brought up in a school of scepticism than in a school of credulity, although perhaps neither is desirable.

The conditions on which are based the belief that the bacillus is the cause of tuberculosis are exceedingly difficult to establish. So difficult, indeed, did they seem to him that for a long time he could not regard them as possible. He believed now, however, that they had been placed on a firm basis. The conditions referred to, which were doubtless familiar to most of those present, were those which are generally regarded as essential to establish that any vegetable organism is the cause of a given infectious disease. They are as follows:

1. The organism must be found in the blood or tissues of the infected animal, or in both.
2. It must be obtained from the blood or tissues in a state of absolute purity.
3. The organism, thus pure, must be capable of producing the same disease when introduced into the blood or tissues of an animal susceptible of it.
4. The same organism must be found in the blood or tissues of the second animal in which the disease has been produced.

These conditions, as he had said, he believed to be now fully established in the case of the bacillus tuberculosis. The second of these, the steps to the securing of which are by far the most difficult to carry out, has been secured by the culture processes now brought to a state of such high perfection. Without going into further detail, he would simply say that the methods followed by Koch in relation to tuberculosis were beyond criticism, and, he thought, were now generally allowed.

But it is plain also, he went on to say, that the establishment of the proposition that tuberculosis is thus caused does not preclude its being caused also in some other way, and in consequence of this, for a time, a halt was necessitated in proclaiming that the bacillus is the sole cause of tuberculosis. Very soon after the publication, in 1866, of Villemin's experiments in the inoculation of tuberculosis it was announced that the disease could be produced by the inoculation of indifferent substances (that is, simple non-specific irritants), and among the supporters of this proposition who based such views on their own experiments were Wilson Fox (1868), Cohnheim, Waldenburg, and Burdon Sanderson. Cohnheim was the first to retract, as the result of further experiments, even before 1882, when Koch's observations were published. Wilson Fox's experiments were repeated at his request in 1883 by Dawson Williams with entirely negative results, which led to a renunciation of his former views by Fox, in December of that year. Finally, Sternberg's experiments (reported in the

American Journal of the Medical Sciences, January, 1885), consisting of the injection of ultramarine blue and powdered glass into the peritoneal cavities of rabbits, seems to have settled the question, and even Formad, who was one of the last to yield, admits that the products are non-specific inflammatory nodules. Thus, the last obstacle to the doctrine that the bacillus is the sole cause of tuberculosis is removed, and attention can now be directed most profitably to the corollaries which grow out of it.

The first inevitable deduction is that tuberculosis must also be contagious; and yet the contagiousness is by general acknowledgment so slight (so few cases being directly traceable to contagion as a cause), that some explanation is necessary. The explanation, he thought, would be found in the mode of dissemination of the contagion, as shown in some comparatively recent observations by Cornet, who inoculated animals with sponge scrapings from the walls of rooms occupied by phthisical patients. Large numbers of animals thus inoculated were found tuberculous, while the control experiments, made with sponge scrapings from houses not inhabited by tuberculous patients, gave negative results. Further, in no case was the dust of the walls infectious where sputum cups were exclusively used to receive the expectorated matter, although such sputum abounded in bacilli. Thus it is learned that it is through the dried sputum whose bacilli-containing particles are disseminated in the air that the disease is spread, as was indeed originally suggested by Koch; infection being chiefly through the respiratory organs.

Tuberculosis may be characterized as feebly or slightly contagious in the same way and for the same reason that typhoid fever is slightly contagious, because ordinarily the excreta are promptly removed, even if not disinfected. It is only when they dry upon the linen, and thence become scattered through the air, that they enter the lungs or alimentary canal and communicate the disease, as sometimes happens, as is well known, to those nursing typhoid cases. The same conditions, also, which intensify the contagion of diseases acknowledged to be contagious increase the activity of that of phthisis. Thus, the disease is most frequent when people are crowded together, as in prisons, where the mortality is four times as great as outside, and in manufactories, where it is twice as great. To this may be added the fact that married couples infect each other, especially the husband the wife, and that the members of healthy families may become infected, one after another, after removal to a house previously occupied by a tuberculous patient. To the same end tend the environment experiments of Trudeau already referred to to-night.

In the same direction pointed some most valuable and laborious observations of Dr. Lawrence L. Flick, of Philadelphia, illustrated by a series of maps locating the deaths from tuberculosis in a single city-ward for twenty-five years, in which he shows that of the infected houses, scarcely 10 per cent. are isolated (that is, have not an infected house next to them). About 33 per cent. of the infected houses, moreover, have had more than one case in them. Finally, through diagrams showing the distribution of smallpox, typhoid fever, diphtheria, and scarlet fever, he shows that the groupings of phthisis are identical with those of these contagious diseases.

That tuberculosis is also communicated through the

alimentary canal is likewise well attested. The chief medium, of course, is food, and especially milk. Gerlach first fed young animals upon the milk of tuberculous cows, with results sufficiently successful to justify the conclusion that there was some specific virus in the milk of such cows which would produce tuberculosis of the alimentary canal or mesenteric glands. Albert reported the case of a litter of young pigs fed on the rejected milk of a tuberculous cow, all of which died of tuberculosis. Finally, Bang reported at the meeting of the International Medical Congress at Copenhagen, in 1884, that he had demonstrated tubercle bacilli in the milk of cows suffering from tubercular mastitis and the production of tuberculosis by the inoculation and ingestion of such milk. Nocard also showed the presence of tubercle bacilli in the milk of cows. Sims Woodhead, in an examination of over six hundred cows in the Edinburgh dairies, found thirty-seven in which there was mastitis, but in the milk of only six, or sixteen per cent. of cases, could he demonstrate tubercle bacilli, and these in small numbers. In one of the six, and subsequently in five others, they discovered bacilli in enormous numbers in the udders.

Such observations as these are admirably supplemented by those of Cornet, reported to the Paris Congress for the Study of Tuberculosis in 1888, when he showed that cultures of the tubercle bacillus introduced into the intestines penetrate very quickly into the mucous walls. At the end of four days after introducing into the cesophagus of guinea-pigs a few drops of tuberculous cultures, he noted submucous tubercular lesions and rapid generalization, but without epithelial lesions, while bacilli were found in the mesenteric glands. But while the general expression of the Congress was against the use of tubercular flesh, and especially tubercular milk, and while the dangers of the use of the former were emphasized, no absolute demonstration of the harmful effects of meat from tuberculous cattle seems to have been afforded; while there were those, as Nocard, who thought its dangers might be exaggerated. Cagny, however, related a case of tuberculosis transmitted from man to poultry. The chickens belonging to a certain family, one member of which was the subject of pulmonary consumption, were found to be almost all diseased. Inquiry discovered the fact that the sick man had been in the habit of walking in the garden, where the chickens had eagerly seized upon the matter expectorated by him. The liver was found to be the seat of the tuberculosis in the chickens.

Again, Mosler, of Greifswold, reports the case of a patient who could not be persuaded to eject his sputum, but swallowed it in large quantities. Ten days after his first attack of cough, diarrhea with colic set in, which continued until death supervened ten days later. The autopsy revealed tuberculosis of the lungs and intestine, but nowhere else in the body. Mosler is therefore inclined to refer tuberculosis of the intestine to swallowed sputum, rather than to general infection; although he failed to produce intestinal tuberculosis by feeding animals with tuberculous sputum and lung tubercle.

Having referred to the invasion of the skin by tuberculosis, and to inoculation with it by means of circumcision, etc., Dr. Tyson said that the possible transmission of tuberculosis by flies is another important fact of prac-

tical significance. In the last year E. H. Hoffman, of Dresden, has reported that some flies taken from the room of a patient in whose sputum were large numbers of bacilli, were found on examination to have tubercle bacilli in their intestines; while some fly-specks on the walls of the house also contained bacilli. Again, he fed some apparently healthy flies upon tuberculous sputum, and in a few days a large number died. Finally, in order to determine the vitality of these bacilli he inoculated them into the anterior chamber of the eyes of guinea-pigs in five instances. In four there was no result, but in the fifth success was complete; a large number of fresh, small, tuberculous nodules being found afterward in the lungs, liver, and spleen.

The relation of the bacillus to heredity has as yet failed of a satisfactory explanation; more particularly the congenital tuberculosis, for the acquired is probably the result of inoculation by the all-pervading bacillus of tissues well prepared to grow it. Congenital tuberculosis admits of two solutions: first, that the bacillus exists in the ovum of the mother or is communicated to it with the seminal fluid; and, second, that it is passed from the blood of the mother to that of the foetus through the placenta. In support of the first is the fact that Johne has demonstrated the bacillus in the spermatic tubules and beneath the epithelium of the prostate. Against it is the fact that Rohlfs inoculated rabbits with serum from consumptives with uniformly negative results. Beyond this all is speculation. The second explanation has, however, more tangible support; first, in that other bacteria have been shown to be thus transmitted, as the spirillum of relapsing fever, by Spitz, and the bacillus of typhoid fever by Neuhaus. Such transfer, however, presupposes, of course, the presence of bacilli in the blood, and while Weichselbaum has succeeded in demonstrating tubercle bacilli in the blood, it is very infrequent.

It must be admitted, too, that although Landouzy and Martin have obtained positive results of the inoculation of animals with the placentas of phthisical patients, no tubercle bacilli were found in the products, which may therefore have been pseudo-tuberculosis. Chanen relates the case of a tuberculous mother prematurely confined at seven and a half months, whose child died three days later with tubercular lesions of the liver, spleen, and mesenteric glands. Merkel reports the case of a woman tubercular at conception, who was delivered at time of a child which died. At the autopsy caseous nodules were found in the palatine arch, in the lymphatic glands, and behind the hip-joint. In neither of these cases, however, was the bacillus sought for. Landouzy and Martin have produced tubercular products by inoculating portions of organs from apparently healthy foetuses derived from tubercular mothers, but the tubercle bacillus was again wanting in the products; while Leyden has repeated their experiments with negative results. Johne, however, has demonstrated tuberculosis in the fetus of a tuberculous cow. Since most of the blood of the umbilical vein passes through the liver, this organ should be a favored seat of congenital tuberculosis of placental origin, as was the fact in Johne's and in Chanen's case.

Another important corollary to the proposition that the tubercle bacillus is the essential cause of tubercular disease relates to the tenacity of the life of the bacillus. Caden and Mollet, in experiments made with a view to

ascertain this, found that tubercular matter, dried and pulverized, is capable of transmitting tuberculosis 102 days after such preparation; but they conclude that virulence does not persist after from 30 to 70 days, unless special care is taken to preserve it. In bulk, as in dried lung, they found virulence maintained 150 days. Schule and Fisher claimed that tuberculous matter remains active at least six months, while Pietro asserts that well-dried sputa may retain infectious properties for nine or ten months at a mean temperature of 77° F.

The evident practical deductions to be drawn from these facts, Dr. Tyson said, he left to those whose province it was to discuss the important matter of treatment.

DR. H. M. BIGGS said that we had now in our possession absolute proof of the causal relation of the bacillus of Koch to tuberculosis. No fact in medicine is better established than this, with the possible exception of the essential cause of anthrax. The evidence, indeed, answers very nearly to the exactness of mathematical demonstration. It seemed to him that the profession could not too soon do away with the notion, held by many even yet, that heredity and other causes are prime factors in the etiology of phthisis. There is one, and only one cause, and that is the tubercle bacillus. That these other factors have an influence we cannot deny, but this influence has the effect simply of reducing the normal power of resistance in the tissues. In order that infection shall result, it is necessary that the dose of bacilli taken into the system shall have the effect of overcoming the tissue-resistance. Depressed vitality resulting from any cause, and antecedent pathological processes existing in the lungs, will naturally facilitate this action of the bacilli.

He believed that the tubercle bacilli were capable of causing the disease without the assistance of any other factor, provided that a sufficiently large number of them entered the system. Heredity, then, means, not the transmission of a predisposition to tuberculosis, but that tuberculous patients transmit to their offspring organs which are easily acted on by such agents as the tubercle bacillus; in other words, organs which have a less resisting power than those of robust individuals. In such organs there is simply an absence of strength, and not the positive possession of unfavorable qualities. It seemed to him that this was a very important point.

If these views are accepted, it follows, first, that phthisis pulmonalis is distinctly contagious; and, secondly, that it is a distinctly preventable disease. The great question that lies before us, therefore, is the prevention of tuberculosis, and he thought that in trying to solve this problem we cannot too strongly insist upon the fact of the single cause of the disease. In the work of prevention all discharges from tuberculous patients should be disinfected, and all tuberculous animals should be destroyed; and we can only hope to carry out such a work by educating the profession and the public in the belief that the disease is due to a single cause. Whether tuberculosis occurs either in animal or man, the fact must be absolutely recognized that it is invariably the result of tuberculous disease existing in some antecedent case.

DR. H. P. LOOMIS said that there was one point to which Dr. James did not allude, and in regard to which he thought it important that something should be said. In the subjects of phthisis there may be what may be called a pre-bacillary condition of the system. It is a

condition of depressed vitality, about which we know very little, and it would seem to afford an excellent field for useful investigation by competent observers. As contributing to this condition we may have heredity, alcoholism, and other depressing influences; but, in addition, in order that tuberculosis should occur, we must have the spark to kindle the flame, and that spark is the specific bacillus. Dr. Loomis said that in confirmation of Dr. James's observations as to the dead-house of the New York Hospital, he could state that he had found that in no less than sixty per cent. of all patients who died at Bellevue Hospital there were old tubercular changes recognizable in the lungs.

DR. TRUDEAU, of Saranac Lake, exhibited some interesting specimens, among which was a copious growth of tubercle bacilli on a piece of potato, illustrating the fact that the bacillus could be cultivated on vegetable, independent of any animal, structures. He also exhibited the lungs of a number of rabbits which were the seat of well-marked tuberculosis as the result of inoculation. He stated that it was possible to produce in animals any kind of phthisis that was known in the human subject by properly regulating, first, the quantity of virus employed; second, the site of the injection, and, third, the environment of the animal. Acute miliary tuberculosis, for instance, could be caused by inoculating the vein of the ear. The animal would die of the infectious disease in about twenty-five days, and an examination would show the presence of tubercles everywhere in the body. By injecting the virus into the apex of the lung a condition would be produced in which fibrous tissue would be found to predominate over the tubercular.

DR. W. H. THOMSON read a paper on

THE INFLUENCE OF THE MICROBE THEORY ON THE TREATMENT OF PHTHISIS.

Having given a sketch of the investigations of Villemain, published in 1865, and of the observations and arguments brought up in opposition to them by Cohnheim, Wilson Fox, and others, he said that the specific nature of tuberculosis was fully re-established by the experiments of Klebs, and that with these experiments as a basis sodium benzoate was employed for the purpose of destroying the specific bacteria, whatever they might be, a considerable time before the discovery of Koch. As soon as Koch's conclusions were announced all sorts of so-called germicidal remedies came into vogue, and Dr. Thomson spoke particularly of the use of salicin and iodoform. In every case of phthisis in his service at Bellevue and Roosevelt Hospitals in 1885 and 1886, he employed the latter agent; but as he never met with a single case which seemed to be in any way affected either by its administration or its withdrawal, he then abandoned it entirely.

He said it would only take up time uselessly to speak of Bergeon's short-lived sulphuretted hydrogen treatment and of the use of such agents as tannin, acetate of lead, creolin, and creasote. Personally he had never expected any specific treatment to be of permanent value on account of the organic character of the tubercle bacillus. He had never seen a case of smallpox, measles, or other specific disease that was shortened a single day by the administration of an antiseptic or any other agent whatever. To use a homely simile, we did not know of anything that could be employed by the farmer which would

kill the weeds but not the potatoes in his field; and in like manner we could not expect to find any agent that would kill the tubercle bacillus in the body and yet not do injury.

But at the same time Koch's great discovery was not barren of practical results. There is an apparent interdependence of bacterial growths upon each other. That the bacillus needs the assistance of other bacteria in order for it to develop is not often suggested; but Dr. Döllinger has shown that thirteen different forms of bacteria are concerned in the putrefaction of meat, which do their work not so much simultaneously as successively. The streptococcus pyogenes is the most widely distributed microbe known in pathology; so that it may be doubted whether any process in which suppuration takes place ever occurs without it.* It is therefore met with in puerperal fever, diphtheria, scarlatina, pneumonia, etc., and the facts go to prove that this organism only needs an entrance into the body to infect the whole system. May not this pave the way, as it were, for the tubercle bacillus, which without its aid would not find a suitable soil for its development?

If this is so, it is of the greatest importance, first, to check all suppurative processes in the lungs; second, to remove the pus; and, third, to prevent putrefaction of pus. One of the best agents against suppuration is creasote, and this may be used both by inhalation and internally. Dr. Thomson related two cases of phthisis with well-marked cavities in which permanent recovery followed the use of creasote. He then said that while he had, of course, met with many cases in which this agent did no good, he believed, on the whole, it was of more efficacy than any other. The second indication was to cause as far as possible a limitation of the tubercular process by promoting the power of resistance in the tissues. In concluding, Dr. Thomson spoke of the difference between the physical peculiarities of the subject of phthisis and those of the subject of chronic bronchitis. This contrast, he said, existed before the development of a single symptom, but became more and more marked as the two diseases progressed. It seemed that such patients were born each for his own complaint, and acted accordingly. If by such a study we might be able to strengthen the constitution, he thought it would be of service.

DR. L. WALDSTEIN having stated that he agreed in the main with Dr. Roosevelt as to the diagnostic value of the tubercle bacillus, related the case of a young German whose general condition was poor and who suffered from cough and profuse expectoration. He had been treated for bronchitis, and the examination of the sputum produced negative results. The examination of the chest also failed to develop any positive evidence of phthisis. At length, however, after several examinations of the sputum, some tubercle bacilli were detected. The patient was then sent to Davos, and the climatic treatment had proved in a measure successful. He had met with other cases where not a single bacillus could even be found in the sputum, and yet where all the other symptoms presented positive evidence of grave pulmonary trouble. Relative to the subject of prognosis he mentioned the case of a young man of twenty-one who, while apparently perfectly well, was seized with a copious hemorrhage from the lungs. It so happened that three or four weeks before this occurrence Dr. Waldstein had made

a careful physical examination of the patient, who desired to take out a life insurance policy, and the results of this were entirely negative as far as the presence of any disease was concerned. Other hemorrhages quickly followed the first, and after these the sputum presented almost a pure culture of the tubercle bacillus. The patient was then sent away, and he afterward made a complete recovery, so far as any signs of disease remained. The cough and expectoration ceased, and repeated examinations had failed to detect any bacilli. Yet no competent physician would pronounce this patient cured, for one could not say what might be found in after years. He thought, therefore, that Dr. Roosevelt was right in saying that the evidence of tubercle bacilli was valueless as regards prognosis.

DR. B. F. WESTBROOK, of Brooklyn, thought that some of the gentlemen who had preceded him had overstated the case. The tubercle bacillus was not the only cause of tuberculosis; and, while it might, perhaps, be the only exciting cause, there were other important causes besides this exciting one. The others, indeed, were the more important. As to the matter of diagnosis, also, he thought the actual facts had been somewhat overstated. Personally he had never seen a case where the bacillus was present in which he could not make a positive diagnosis of tuberculosis without its aid. A skilful examiner, he believed, could always make the diagnosis in any case where a microscopist could do so by means of the sputa. In cases of pleurisy at the apex of the lungs, however, where it was not known whether tuberculosis originally existed or not, he thought the examination of the sputa would often prove of value. A few cases were also met with in which patients with weak chests have some crackling at the apex and the diagnosis is somewhat doubtful, because emphysema may present precisely the same signs as tuberculosis. In these, too, the presence or absence of the bacillus would be of considerable diagnostic value.

As to the matter of prognosis, if in any case repeated examinations failed to reveal the presence of bacilli in the sputum, he would conclude that there was no tuberculous trouble, and that the case was probably of chronic interstitial pneumonia. The mere numerical quantity of bacilli found in any case was, in his opinion, of no value. As regards the matter of treatment, he believed that the only influence that the discovery of Koch had upon this had been pernicious. It had resulted in the introduction of all sorts of mischievous methods. There could be no specific treatment unless we could discover a specific antidote. Antiseptic agents, however, might be of great service in the treatment of fetid bronchitis, in cleansing and disinfecting cavities and the bronchial tubes, and in fortifying the constitution of the patient.

DR. F. P. KINNICUTT said that some of the antiseptic remedies had an undoubted value in removing foci of irritation and rendering the tissues aseptic. They arrested fermentation and had a stimulating effect upon the vital processes; and it was no doubt to such effects that the benefit noticed from the use of creasote was due.

EIGHTH GERMAN CONGRESS OF INTERNAL MEDICINE.

Held at Wiesbaden April 15th to 18th, 1889.

(Specially reported for THE MEDICAL NEWS.)

The Eighth German Congress of Internal Medicine held its first meeting on Monday, April 15th, under the presidency of Professor Liebermeister, of Tübingen.

DR. LEICHENSTERN, of Cologne, read the first paper, which was on the

PATHOLOGY OF ILEUS.

In the most ancient writers on medical subjects will be found allusions to ileus; but our most valuable knowledge on this subject is of more recent date, when our mode of investigation had become more rational, and our anatomical studies more certain. Ileus was considered by Mercurialis as an inflammation of the ileum, as colic was regarded as an inflammation of the colon. Later, the designation of ileus was applied to the rejection of feces by the mouth, for some cause of intestinal obstruction. This definition, which we owe to Heurnius, has been accepted by medical scientists, and has been progressively completed as our knowledge of the affection has become more precise.

To-day, we understand by the term ileus a grave and complex train of symptoms which develop when there is intestinal obstruction, due to some mechanical obstruction, or to a paralysis of the unstriped intestinal muscular fibres. The ileus can be divided, according to its mode of formation, into: 1. Mechanical ileus; 2. Paralytic ileus; still oftentimes both these mechanical and paralytic causes coexist, and one can even say that in the majority of cases these two processes of obstruction contribute to the development of the symptoms which are so varied in this disease. The stenosis of the intestinal canal, whether due to a mechanical cause or to a paralytic process, can manifest itself in a very sudden manner, such as the passage of a gall-stone, and we then have a train of symptoms indicative of acute ileus. Still, the sudden appearance of these symptoms does not mean that this stenosis is of immediate formation, for this contraction might have taken place progressively, and have persisted a long time without any notable influence on the general health, until the day when, for some unexplainable cause, perhaps, the compensation which resulted from the muscular hypertrophy developed in the part of the intestine situated above the stenosis, is suddenly interfered with. This stenosis can remain in a latent form, as the contraction of the unstriped muscular fibres situated above the stenosis would suffice to allow the feces to pass.

Amongst the causes which can bring on this more or less latent stenosis, we can mention peritoneal bands, adhesions of the ileo-caecal or vermiciform appendix, or any changes in the uterus and neighboring parts. As a matter of fact, acute intestinal obstruction is always accompanied by a paralysis of the intestinal fibres, and consequently the ileus is not a purely mechanical one.

The symptoms of ileus are local and general. They come on suddenly or progressively, according to the state of the stenosis, whether it is more or less permeable, and according to the point at which the lesion has taken place. In the Galen school, the fecal vomiting was interpreted on the theory of the peristaltic movements. Morgagni

greatly contributed to sustain this theory when he demonstrated that normally the intestinal contents of the colon have already lost as much water as when they come out of the rectum; since this demonstration, it has been admitted that the fecal vomiting was composed of the contents of the small intestine, which being compelled to stagnate there, on account of the obstruction, underwent a putrid fermentation, giving to the vomited matter the fecal-like character observed. It has been demonstrated by such authorities as MM. Hoppe-Seyler, Kühne, Jaffé, Bowmann, etc., that in the vomited matter, in cases of ileus, the presence of chemically determined products encountered in putrid fermentations were easily discernible, even the presence of the bacteria of putrefaction has been demonstrated.

We must, then, draw a definite line between the fecal vomiting which is very exceptionally met with, and the fecaloid vomiting, which does not consist of real fecal matters, but of fermented intestinal contents, as a result of stagnation above the occlusion, and impregnated by an odor like that of the real feces, but developed in the small intestine and not below it. The vomiting can be of a fecaloid character even if the matters come from the upper part of the ileus or jejunum, as has been demonstrated by the observations of Kahler, in Germany, and of Cossy, Larguier, and Besnier, in France, who think it possible to conclude, according to the early or late appearance of the vomiting of fecaloid matter, as to the actual seat of the obstructive lesion.

The antiperistaltic theory has been abandoned later for the hydraulic theory, which, up to date, has had many partisans, although it has been severely combated by Van Swieten, Morgagni, and Haller. It is to Haguenot, of Montpellier, that we owe the most complete demonstration of the reality of the antiperistaltic movements of the intestines, and after his experiments, made as early as 1713, a great many physicians accepted anew the antiperistaltic theory. The author made, with Kirschstein, a new experiment to demonstrate the real state of the antiperistaltic movements. After having excised in a dog a section of about ten inches of intestine, then reversing it and reuniting it, end to end, to the cut sections, he killed the animal seven days after the operation, which was made with the strictest antiseptic measures, and prevented the development of any septic inflammation. At the autopsy it was hardly noticeable where the segment had been reversed, and as all the phenomenon of digestion had been accomplished without the least inconvenience, we must conclude that the movements in the reversed segment of intestine must have taken place as in the rest of the intestinal tract, in the same direction; it also establishes the fact that the contraction progressed in this reversed segment in a direction the reverse of its habitual. In dogs in whom concentrated saline injections had been made, Nothnagel was also able to observe antiperistaltic movements.

We are, then, enabled to admit that the products of fermentation developed in the intestine as a result of stagnation of its contents, can produce on its muscular walls the same action as the experimental saline injections, although Bokai, in publishing his experiments in relation to the injection of products obtained from the fecal matters does not mention antiperistaltic movements, and only speaks of intestinal spasm.

Leyden, at the Congress of 1884, presented a patient

in whom he had been able to observe antiperistaltic movements, without there being any signs of occlusion. In France, Dieulafoy, Jaccoud, and Briquet have published several observations of fecaloid vomiting in hysterical patients, which led us to believe in the real existence of antiperistaltic movements without intestinal occlusion.

In ileus the fecaloid vomiting can occur from any point of the intestine where the obstruction has taken place, either from mechanical obstruction or from a paralysis of the muscular coat, or, again, from both these causes. The stagnation of the matter in the intestines is the origin of a urinary symptom to which Jaffé has attached a real diagnostic value, for, according to him, indicanuria or phenoluria are only observed in those cases where the occlusion is situated in the inferior portion of the ileum. Meteorism also contributes, on account of its form, variable in different cases, to the diagnosis of the seat of the lesion.

The general symptoms are the result of reflex phenomenon or of auto-intoxication manifestations; in addition to the pain, which indicates about the point of obstruction, there is produced, through the intervention of the sensitive nerves, a series of reflex disturbances which locate themselves on the innervation and vascularization of the involved region itself, at the same time influencing the cardiac activity; hence the origin of collapse, of the sudden fall of temperature below normal, of the cutaneous anaemia, of the abdominal facies, smallness of the pulse, etc.

To it is due also the albuminuria or anuria, or the disturbances of respiration, which are also helped by the presence of meteorism, cold sweats, etc.

The nervous system contributes to the symptomatology by localized or generalized contraction, by delirium, coma, and a variety of tetanic accidents which are analogous to those observed in certain ovariotomies; several of these nervous symptoms are allied to disturbances of the circulation, which produce anaemia of the brain, or to phenomenon of fecal herniae.

The introduction into the lymphatic system or veins of putrid matter, developed from stagnant intestinal contents, is often favored by necrotic products, which can occur at the obstructed spot, and which will produce, in such cases, an auto-intoxication which can be compared to typhus cholera. There is a great diminution in the quantity of water contained in the blood, which can explain in part, as in cases of cholera, the interference with the circulation and the weakening of the cardiac contractions. This reduction of the quantity of water found in the blood is due to vomiting and to intestinal hypersecretion. Malgaigne has studied such a type under the name of *hernial cholera*, and Moreau and Hanan have shown that a section of the mesenteric nerve fibres produces a considerable amount of liquid in the intestines, while Cohnheim saw an example of paralytic hypersecretion.

The knowledge of these symptoms will enable us to make a correct diagnosis, to distinguish the ileus from other affections which are liable to simulate it, such as symptoms produced by utero-ovarian lesions, the inflammation of a testicle located in the inguinal canal, enteralgia enteritis, and especially perityphlitis and peritonitis, which can be accompanied by a paralysis of the intestinal fibres. The next diagnostic step is to find out the

seat of the occlusion. In this respect it may be well to remark that, when the occlusion is situated in the upper portion of the small intestine, the abdominal wall is contracted, while in the other cases the abdomen is uniformly distended, with a depression in the regions of the ascending and descending colons. Moreover, if the occlusion has already existed for some time, the increase or swelling of the intestine itself produces a certain number of projections on the surface of the abdomen.

When the lesion occupies the lower part of the small intestine, the constipation will have been more prolonged before the appearance of the symptoms, and the late appearance of the fecaloid vomiting and the gradual development of reflex symptoms contribute to establish the diagnosis of the seat of the lesion.

DR. CURSCHMANN, of Leipzig, then read a paper

ON THE THERAPEUTICS OF ILEUS.

Surgical treatment cannot always be applied in ileus on account of the excessive intraabdominal pressure, due to meteorism, etc. In this respect we must distinguish, on the one hand, the cases in which ileus is characterized by very marked meteorism and by a great weakness in the cardiac contraction; on the other hand, cases in which these symptoms do not exist. In a female suffering from an ovarian tumor, we can always undertake a laparotomy if the general state of the patient is good; while in persons under the influence of a general state as described above, such a procedure would be fatal in its results.

In cases of ileus, also, we might be compelled to make a very careful and very prolonged exploration of the suspected intestinal obstruction. In those cases, it can be well understood, laparotomy would only help us if the diagnosis of the seat of the lesion had previously been carefully determined. On the contrary, every time that we are certain of the diagnosis—that we know the seat and anatomical cause of the lesion, we must resort to the operation as early as possible.

The statistics of ileus, even if the treatment has remained an exclusively medical one, is not of so an unfavorable prognosis as is ordinarily admitted. Out of 105 cases, 50 of which were the author's, the number of cures without the intervention of the surgeon was 35.5 per cent. In the medical treatment purgatives must not be allowed, for they rapidly weaken the patient; they also increase the secretions, and consequently the abdominal pressure, producing, therefore, an increase of the paralysis of the muscular fibres. The author always begins by giving his patients about 0.5 grammie to 1.5 grammie of opium in the twenty-four hours; which medication is immediately suspended when dangerous symptoms of muscular paralysis of the intestine occur. Washing out of the stomach with the stomach-pump acts as a palliative, and is curative also, diminishing the pressure in the stomach, and from thence in the intestines. Gaseous injections in the rectum must be used to immobilize the diseased intestinal segments, and eight to ten punctures with the hypodermatic syringe, here and there, can also contribute to give more freedom to the involved intestine and help the final cure as much as possible.

DR. JURGENSEN, of Tübingen, agreed with the treatment of intestinal obstruction described by Dr. Curschmann; yet there are certain points which he could not allow to

pass, such as the treatment and efficaciousness of gaseous injections into the rectum. He did not at all believe in the efficiency of treatment by these injections, for the following reason: if we inject into the rectum of a dog a certain quantity of atmospheric air, we find that the intestines, being dilated, compress themselves mutually, and if at that moment we measure the arterial pressure, we find that it is very much reduced, and that the oxygenation of the blood is very much interfered with, the blood withdrawn from an artery presenting all the characters of venous blood; from this he concluded that gaseous injections in the dog result in a great lowering of the arterial pressure and a diminution in the oxygenation of the blood.

What takes place in a man suffering from intestinal occlusion, his breathing being already very much interfered with? A gaseous injection can only increase this respiratory dyspnea, and death will occur very rapidly; we also know that death by heart-failure is of common occurrence in ileus. He concluded by saying that he did not think it at all necessary to increase the chances of death of an individual suffering from intestinal obstruction, by giving him gaseous injections.

DR. ROSENBACH, of Breslau, said that in cases of intestinal occlusion he thought it necessary that the urine of the patient should be carefully examined; a certain quantity of nitric acid is added to the urine and shaken for some time; if the reaction indicates the presence of a great quantity of urobilin, this becomes of very great importance in a diagnostic as well as in a prognostic point of view. The presence of urobilin in the urine indicates a great interference with the nutritive changes, which interference is due to mal-assimilation of the ingested albumin; we have here a phenomenon of inanition by intestinal insufficiency, for the resorption of intestinal matters in a state of putrefaction has nothing to do in this matter. The eliminated organic matter is formed in this case by the albumin which is held in reserve in the human body; the reaction is an important one, as it demonstrates an anomaly in the molecular changes. By the use of this test any anomaly is easily discernible.

If, after fourteen days, this reaction still persists, it indicates that we have to deal with an intestinal disease which will prove fatal in a very short time; this has been shown by clinical experience, and the persistency of this reaction contraindicates absolutely any surgical interference. As to the intestinal punctures, he thought them excellent; but they must not be made with a trocar, no matter how small it may be; the best instrument to be used is, without doubt, Pravaz's hypodermatic syringe; several punctures must be made at the same time in different places, going from one side of the abdomen to the other, for the intestinal pressure is unevenly distributed along the whole length of the intestinal canal; in all his experiments he had always found the intestinal pressure to be higher on the right than on the left side; hence, the right hypogastrium ought to be the region more often punctured.

PROF. NOTHNAGEL, of Vienna, said that if the peristaltic movements are very great, invagination will produce itself without giving rise to symptoms of intestinal occlusion, such as are ordinarily presented. He did not believe in invagination as a frequent cause of intestinal obstruction, nor did he believe in the antiperistaltic

movements of the intestine; whenever he has injected great quantities of a concentrated saline solution into the oesophagus of a dog, he has never seen any antiperistaltic movements, and these spasmoid actions of the intestine he had observed only where he excited the intestine itself.

PROF. ZIEMSEN, of Munich, demonstrated formerly that gaseous injections are not so dangerous as was stated to-day, but they must be made with care, for the air can pass through the obstacle and acting upon the upper part of the intestine, bring on vomiting. He had seen in two cases fecal vomiting, which had been diagnosed intestinal obstruction; at the post-mortem a communication between the transverse colon and stomach was discovered and the fecal matter passed from one to the other. One case was a round stomach ulcer; the other a carcinoma of the same organ. As regards treatment, I do not believe at all in internal medication, as drugs are not absorbed by the intestines. At the age of twenty-eight years, he suffered from an ileus; opium given by the mouth had no effect, opium enemata alone gave him some relief. Rosenbach has well demonstrated this fact of the non-absorption of drugs by the intestines under the conditions just named.

In addition to the above treatment, he thought it well to puncture the intestine several times. He had made as many as sixty-eight punctures at one sitting, using an ordinary well-sterilized pin, and he was sure that these punctures have a favorable influence on the course of the disease.

Surgical intervention he thought sometimes a dangerous proceeding, as he had seen a patient under chloroform suddenly taken with vomiting of fecal matter, which penetrating into the respiratory passage produced sudden death.

PROF. IMMERMANN, of Basle, then read a paper on
THE FUNCTIONS OF THE STOMACH IN PULMONARY
TUBERCULOSIS.

He said that the treatment of all the chronic infectious diseases, such as tuberculosis, must be carried on in a new direction, since the researches of Metschnikoff on the fight which takes place between the cells and the microorganisms which invade the human economy. For this reason we find that Debove in France, Dettweiler and Bezold in Germany, have tried to place the organism in the best possible conditions to enable it to defend itself against the tubercle bacillus. The natural feeding of the phthisical patient is somewhat difficult, on account of the absolute distaste for food which certain phthisical patients have, even at the very beginning of their disease.

If the physician, however, is persevering, he will be able to force the patient to take a really large quantity of food; this is the process recommended by Dettweiler. Immermann's studies have been directed to the study of the physiology of digestion as encountered in phthisical patients; the variation therefrom had been named by Dettweiler as the nervous dyspepsia of phthisis.

As a result of his experiments, he has found that in nearly all the tubercular patients he has had to treat, the stomach was in a normal physiological condition; moreover, the state of the stomach seems to be absolutely independent of the more or less advanced state of the pulmonary lesions; the gastric juice remains the

same. There is, perhaps, an exception to be made for the tuberculous patients suffering from hectic fever, and even in such cases the function of the stomach is interfered with on account of the application of the law of general pathology which shows that the stomach functions are very much interfered with in all febrile states of the organism. He published the result of twenty-five observations, in Virchow's *Archiv*, last year, showing that in all these cases the digestive powers had been absolutely maintained, and since this communication his observations have continued just as conclusive. He maintained that in phthisical patients the functions of the stomach remain perfect.

For the purpose of studying the digestive power of the gastric mucous membrane in such patients, he employed the stomach-pump fifty-five times. In fifty-one cases he found the stomach absolutely empty six hours after the last meal; moreover, the digestion was normal even where it seemed impossible that it should be so. In a certain patient who had enormous pulmonary cavities, broken-down cachetic state, no appetite, in the midst of his hectic fever digestion was going on perfectly.

His next series of experiments was made on forty-five patients; after fasting twelve hours a large meal was given to them, and he then, by the aid of the stomach-pump, examined the composition of the gastric juice. It presented the reaction of Gunsburg, which consists in reducing aniline by hydrochloric acid in thirty-eight cases. The quantity of hydrochloric acid found varied from 1 to 4 per 1000, and this even in the most advanced cases of phthisis; moreover, no traces of lactic or butyric acid could be found. In six of his patients the aniline test remained negative, and the extract obtained was not acid. This establishes the fact that in phthisical patients the quantity of the hydrochloric acid is not below the average of the gastric juice of a normal stomach. Having demonstrated the presence of hydrochloric acid, he next studied the amount of pepsin; for this purpose, every morning and evening he aspirated from the stomach of a phthisical patient a certain quantity of gastric juice, and he then placed two three little disks of albumin of about two to four millimetres in thickness in this liquid, and in a culture stove. When the test of Gunsberg existed it took about one hour for the digestion of these small disks.

In conclusion: there is really no dyspepsia in pulmonary phthisis, it does not belong to this affection, and if present, is more to be regarded as a complication. The inappetency or dyspepsia of tubercular patients has no connection whatever with the anatomical or physiological state of the gastric mucous membrane, and one must not attach a too great importance to the morbid symptoms, which really do not belong to the stomach.

(To be continued.)

NEWS ITEMS.

A Judge's Opinion on the Use of the Title Homœopathist.—Judge George C. Barrett, of the Supreme Court of New York, sends to the *New York Medical Times* an opinion which will be read with much interest. He was asked to give a reply to the question: "Has a physician designating himself an 'homœopathist' and called as such to a patient, any legal or moral right to adopt other than

homeopathic means in the treatment of the case?" To this Judge Barrett answers: "I have your note of the 11th inst., asking my opinion upon a question of professional ethics. In my judgment there can be but one answer to your question, and that in the negative. If I call in a medical man who designates himself a 'homeopathic physician,' it is because I do not wish to be treated allopathically, or eclectically, or otherwise than homeopathically. There is an implied understanding between myself and the homeopathist that I shall receive the treatment which, by tradition and a general consensus of opinion, means small doses of a single drug administered upon the principle of *similia similibus curantur*. If there is to be any variation from that method I have a right to be informed of it and to be given an opportunity to decide. Common honesty demands that before a confiding patient is to be drugged with quinine, iron, morphine, or other medicaments, either singly or in combination, he should be told that the 'homeopathist' has failed, and that relief can only be afforded by a change of system. An honest 'homeopath' who has not succeeded, after doing his best with the appropriate homeopathic remedies administered on homeopathic principles, should undoubtedly try anything else which he believes may save or relieve his patient. But when he reaches that point the duty of taking the patient into his confidence becomes imperative. The patient may refuse to submit to the other system or he may agree, but prefer a physician whose life has been specially devoted to practice under that other system. He may say to the 'homeopathist,' 'You have failed, but I prefer to try another gentleman of your own school, before resorting to a system that I have long since turned my back upon.' Or he may say, 'Well, if homeopathy cannot save me, I prefer to go to headquarters for allopathic treatment.' All this, gentlemen, is the logical sequence of the particular designation 'homeopathist.'"—*Medical Record*, May 4, 1889.

Medical Men and their Remuneration.—A curious case will shortly come up for trial in a law court in Saxony, the result of which will scarcely fail to be interesting to most practitioners. A medical man was in attendance upon the wife of a rich man in Saxony. The patient was exceedingly ill, and her husband was naturally extremely anxious. For the purpose, as it would seem, of stimulating the best energies of the practitioner, the husband promised, if his wife recovered, to give half his fortune to the doctor. The circumstances were propitious for the patient, and her health became established; in short, a complete cure was effected. This result having occurred to the entire satisfaction of the husband, the latter forwarded in the course of time a large sum of money in recompense of the practitioner's services. The doctor, however, refused to accept the sum in question, and claimed as his reward the moiety of the fortune which had been promised him. The rich man's fortune was equal to £100,000, and although he seems to have agreed to dispose of half of this amount to the medical man in the event of the recovery of his wife, he now refuses to carry out his promise which he had given, and repudiates the claim which is being made upon him.

Thus the aid of the law is about to be sought in order to determine the point in dispute. The case for the

doctor will, in all probability, entirely depend upon the legal evidence which he is able to produce of the agreement. It is scarcely to be supposed that any feeling of sentiment will be allowed to influence the result. The rash promises which are made in the presence of medical men, either by patients or their friends, is matter of almost common occurrence, under certain circumstances, while the rapid declension of that feeling which is called gratitude, after the danger is past, is proverbial, as far as the practitioner is concerned. In connection with the case above narrated, the doctor, if successful in securing £50,000, will be able to pride himself upon receiving the largest fee which has ever been paid to a medical man; but, generally speaking, it would require a sanguine person to believe that legally the rich man will be compelled to make good the promise into which he seems rashly to have entered.—*Medical Press*, April 3, 1889.

In Memoriam.—At a meeting of the Philadelphia County Medical Society, held April 24, 1889, the following minute was unanimously adopted:

By the death of DR. SAMUEL W. GROSS this Society has lost an industrious collaborator, a wise counsellor, and the profession one of its most brilliant ornaments. As a student, practitioner, and teacher, he possessed, with remarkable surgical acumen, unusual powers of analysis and deduction, and his lectures, like his mental workings, were conspicuously clear, concise, logical, and vigorous. He was an earnest student of the progress of surgery in all countries, with more respect for the experience of the present than the traditions of the past, never satisfied to stand still and ever advancing with the progress of science, he kept his teaching always apace with the rapid strides of surgical knowledge. As an operator he was bold, conscientious, and successful. Possessed of broad views, he was quick to recognize merit and to welcome truth by whomsoever presented. He took an active interest in all that pertained to the welfare of the profession and was ever ready to work for its promotion. He possessed positive convictions and was frank in their expression. As a companion he was genial and entertaining, as a friend generous and true.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 30 TO MAY 6, 1889.

BORDEN, WILLIAM C., *Captain and Assistant Surgeon*.—Relieved from duty at Fort Ringgold, Texas, and ordered to report to the commanding officer at San Antonio, Texas, for duty at that post.—Par. 7, S. O. 100, A. G. O., May 1, 1889.

FISHER, WALTER W. R., *Captain and Assistant Surgeon*.—Is hereby granted leave of absence for one month.—Par. 1, S. O. 30, *Headquarters Department of California, San Francisco, California*, April 27, 1889.

HE MEDICAL NEWS will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

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